THE INDUSTRY'S RECOGNIZED BUTHDRIT

ROCK PRODUCTS

CEMENT - SAND AND DRAYEL - DRUSHED STONE - DEAG - LIME - GYPSUM READY MIXED CONCRETE - CONCRETE REDDICTS - INJUSTICAL MANEGRAS

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MARCH 1945

OF STRUCTURAL AND ARCHITECTURAL CONCRETE



WILLIAMS FINE GRINDING EQUIPMENT WITH AIR SEPARATION

For faster, more effi cient fine grinding of limestone, lime, coal, talc, etc., there is a Williams Roller Mill with Air Separation to fit your require-ments. Finenesses from 100 to 400 mesh. Williams also builds Impact Mills with Air Separation: Mechanical Air Separators for classifying finely ground material or taking the fines out of dry material.



Write Today for **Bulletin 621**

equipment on the market today. With seven sizes to choose from producing from 4 to 30 tons per hour, every producer can profitable install a Williams.

The "Slugger" represents the most advanced type of crushing

Open view of the "Slugger" Crusher showing heavy duty hammers, liners and discs.

OUTSTANDING "SLUGGER" FEATURES

MANGANESE STEEL HAMMERS Heavy duty slug end hammers are standard equipment in the "Slug-ger."

STEEL FRONT END

The part which holds the breaker plate is a steel casting— $3\frac{1}{2}$ times stronger than cast iron.

HAMMER ADJUSTMENTS OVER-COME WEAR

Discs are arranged so that the hammers can be set out as they wear on the end.

MANGANESE STEEL ADJUSTABLE BREAKER PLATE Adjustable towards the hammers

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COVER LINERS 1" THICK Manganese steel liners.

SIDE LINERS 1" THICK. Manganese steel liners.

SEVEN SIZES 30 to 150 horsepower, stationary portable models.

WILLIAMS PATENT CRUSHER & PULVERIZER COMPANY

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St. Louis 6, Me



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Efficient, High-Capacity Handling with LINK-BELT BELT CONVEYORS

You can be assured of maximum belt life, minimum power and maintenance cost, and dependable trouble-free service with Link-Belt Anti-Friction Belt Conveyor Idlers and other equipment.

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Link-Belt engineers pioneered in the development of antifriction belt conveyor idlers and have consistently improved the original, fundamental design—the grease seal, bearing adjustment, shaft mounting and the supporting stands and brackets. All with the result that today's Link-Belt designs offer the very best in belt conveyor equipment to keep production "On the Move" for Victory.

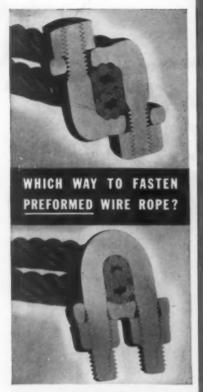
LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Toronto 8. Offices, warehouses and distributors in principal cities.

36" wide belt conveyor equipped with Link-Belt type "70" troughing idlers and type "71" return idlers, handling mine run ore from mine ore bin to vibrating grizzly and picking belt at the rate of 100 T.P.H. Conveyor is operated by a Link-Belt Motorized Speed Reducer and Silverlink Roller Chain Drive.



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Complete Sand, Gravel and Stone Washing Plants . . .
Ready-Mixed Concrete Plant Equipment . . Lime
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. . . Clutches . . Couplings . . . Self-Aligning Ball and
Roller Bearing Units . . Babbitted Bearing Units,
etc Catalogs on request.



The cross-section views show what happens to wire rope. In Fig. 1, Laughlin's "Fist-Grip" Safety Clip holds the 5/8" rope with hardly any distortion (note bemp centers). In Fig. 2, hemp center under U shows how rope is squeezed and flattened by U-bolt's smaller bearing area and "Finger-Pinch". Both were tightened to same tension by torque-indicating wrench.



Here's Why "Fist-Grip" Clips Work Better

Laughlin Safety Clips have identical saddles, flat sides; hold rope firmly without crushing. Saddles fit snugly against "live" and "dead" ends. Fewer clips deliver full rope power. The only clips with drop-forged bolts. Test them, for your rope's sake.

Distributed through mill, mine and oil field supply houses. Write for catalog. Dept. 4, The Thomas Laughlin Co., Portland 6, Maine.







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From jitterbug ride to velvet glide — by rubber

A typical example of B. F. Goodrich development in rubber

THE postwar bus is already developed —and jiggles, bangs, bounces, and bumps are gone. Years ago, B. F. Goodrich engineers realized that, in addition to rubber tires, the shock-absorbing qualities of rubber could be used in springs, too, for greater riding comfort.

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RODUCTS, to, Canada

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p, Manager

Finally, just before the war, they developed a "rubber hip" that suspends an automobile or bus body in soft, cushioning rubber. This device, the Torsilastic spring, is a steel cylinder placed lengthwise to the frame. Inside is a shaft. Space between cylinder and

shaft is filled with rubber, attached by permanent bond to both metal surfaces. The weight of the bus gives a slight twisting action to the rubber.

Road shocks are lost in the rubber—they cannot pass through it to the car frame. The result is the "velvet ride" that has been the aim of automobile designing for decades.

War put a stop to use of natural rubber for this new spring. But now enough synthetic rubber has been released by the government to equip new Twin Coach buses badly needed for wartime transportation... their passengers will be floating on rubber and sitting pretty.

Some automotive men say the bus developments of today will be on your automobile tomorrow, so the rubber spring for the velvet glide may be on your postwar car—another contribution of B. F. Goodrich research. The B. F. Goodrich Company, Industrial Products Division, Akron, Obio.

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RUBBER and SYNTHETIC products

To store 30,000 tones of limestone and provide for rapid reclaiming The Problem. Pile It Up and Take It Away More storage capacity for crushed stone plus facilities for rapid reclaiming were vitally needed here. S-A engineers, in cooperation with the company, developed the highly successful installation shown. For storing flux limestone, there's an S-A Belt Conveyor on a boom—a boom that can be lowered or raised 20° and swung horizontally through 90°. Result: More reclaimable tonnage (up to 30,000 tons) on a minimum area with minimum dead storage. Reclaiming stone for screening and loading onto railroad cars is done by S-A Belt Conveyors in tunnels under the piles. S-A Engineering and Equipment made possible this efficient system. They can do the same for you. Write for full information.

View toward storage pile showing S-A Belt Conveyor on boom (above) and tunnel exit of reclaiming S-A Belt Conveyor System (below)... part of 30,000 ton capacity storage pile is visible. BOOM CONVEYOR TO STORAGE TO PLANT

ESCAPE TUNNEL

STORAGE

RECLAIMING CONVEYOR TO PLANT

RECLAIMING CROSS CONVEYORS

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Plan view of storage system showing set-up for the reclaiming conveyors which operate in tunnels under the storage pile.

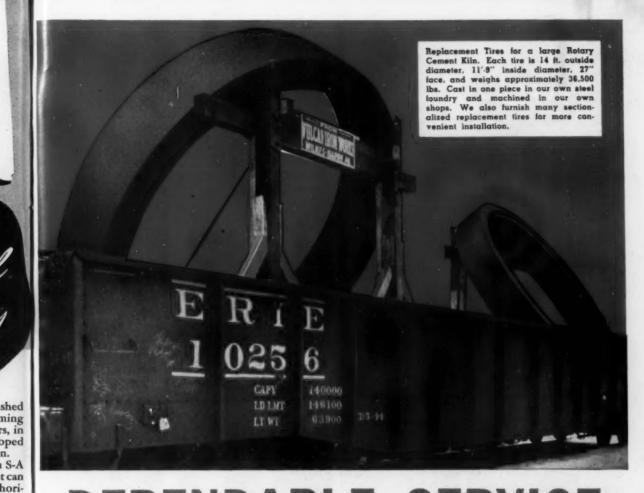
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Rotary Kilns, Coolers and Dryers Toothed, Double-Roll Crushers Rotary Retorts, Calciners, Etc. Improved Vertical Lime Kilns

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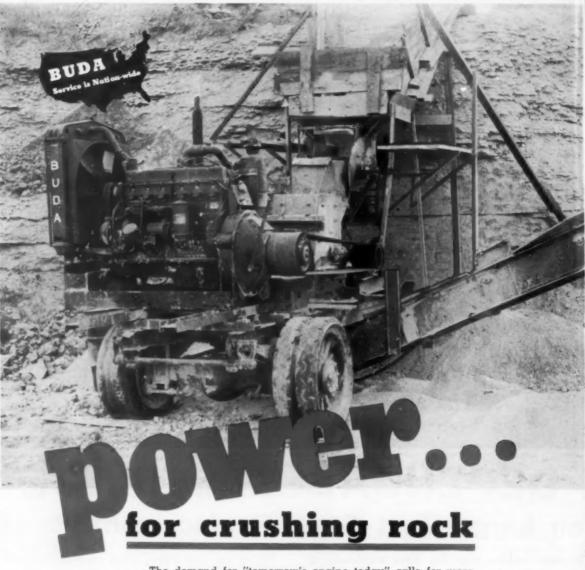
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> High-Speed Hammer-Type Pulverizers Ball. Rod and Tube Mills Automatic Quick-Lime Hydrators Shaking-Chute and Chain Conveyors

Heavy-Duty Electric Hoists Self-Contained Electric Hoists Scraper-Loading Hoists

Steam Locomotives Diesel and Gasoline Locomotives Diesel-Electric Locomotives Cast-Steel Sheaves and Gears Electric Locomotives and Larrys



The demand for "tomorrow's engine today" calls for more horsepower per pound and per inch.

There are different ways of increasing the power of an engine—by speeding it up, by increasing combustion pressures . . . but BUDA achieves this goal through greater piston displacement with no greater weight or size. Longer life is assured through the low pressure Lanova combustion principle.

This, like all BUDA improvements, is born of long and wide experience—through 64 successful years of making better equipment to do a better job.

BUDA engines are now available for essential industries. Write or wire today for complete information.

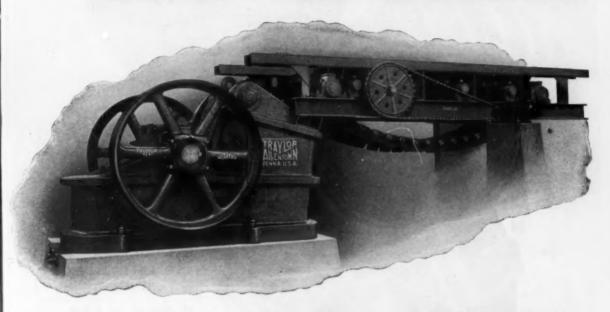


BUDA Nozzle Testers

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Type M Jaw Crusher



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Pictured is a 24"x36" Traylor "Type M" Jaw Crusher equipped with a 36"x12'-0" Traylor All-Steel Heavy Duty Apron Feeder. This feeder keeps any crusher working at full capacity at all times and thus makes it more efficient and economical.

The "Type M" Crusher is built with a Meehanite metal frame, scientifically reinforced, with Pitman Shaft Bearings cast integral.

Other important features are: Cast Steel Swing Jaw and Pitman. Patented Swing Jaw Suspension.

Manganese Steel Patented Smooth Face Curved Jaw Plates.

The crusher is supplied in eight sizes from 8"x12" to 30"x42". The complete range is 4 T.P.H. to %" to 275 T.P.H. to 6".

Write us and we will be glad to make an appointment to talk this crusher over with you.

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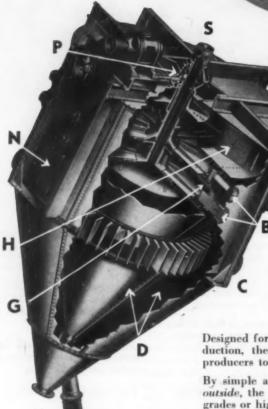
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- G. Closer Fines Separation
- H. Powerful Fan Action
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- P. Automatic Oiling System
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Designed for enduring operation and closely controlled production, the Raymond Mechanical Air Separator enables producers to meet maximum specifications.

By simple adjustment of the vertical damper slides on the outside, the fineness may be controlled to provide standard grades or high early-strength cements.

The double-whizzer feature insures extreme fineness and uniformity in classifying lime, gypsum, slate dust, clays, graphite, silica, talc, limestone and the whole range of non-metallic minerals, chemicals and manufactured products.

Built in nine sizes from 2'6" to 18'0" diameter. Also 10" Laboratory Separator.

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Touchest of all rock-work tires is Goodyear's Hard Rock Lug – performance-proved by years of standout service on every type of tire-killing ground.

That's because this great bruise resister — specially designed for rough, hard work — is superarmored with extra-heavy undertread and with massive, wide-base lugs that grip and guard, extending well over the shoulders to tread-armor the sidewalls against cuts and bruises.

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Built from today's available materials — including the mandatory amount of synthetic rubber — this rugged giant is tougher than ever, thanks to its Rayotwist body — made from Goodyear's patented rayon cord. It's the strongest body we've ever used in a work tire!

And that tough tread is Goodyear's famous universal two-way tread. No rights, no lefts — same grip reverse or forward. What's more, it's a self-cleaning tread, with

straight, wide, V-shaped grooves open at both ends and so pitched that dirt and stones slide out as the tire turns!

Add up all these features and you see why job-wise contractors rate Goodyear Hard Rock Lug tires first choice for the really rough hauls.

BUY WAR BONDS-BUY FOR KEEPS

of the Goodyear
HARD ROCK LUG TIRE



- 1. Massive lug-bar tread
- 2. Extra-thick undertread
- 3. Tread-armored sidewalls
- 4. Superstrong Rayotwist cord

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For drawn vehicles specify Goodyear All-Weather Earth-Mover For traction in soft going specify Goodyear Sure-Gri

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Kennedy machinery is the result of more than 50 years in designing, manufacturing, and installing practically every type of machinery used in rock products plants. That is why exclusive features have been developed which add to the great efficiency of Kennedy machinery. Four types with typical exclusive refinements are shown here. Our engineers and facilities are at your service in fitting such machinery to your particular requirements. And our machinery will help your plant achieve and hold a top efficiency rating.

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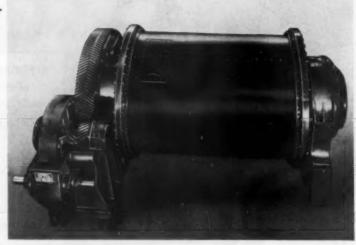
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KENNEDY INTEGRAL GEAR-DRIVEN TUBE MILL

Design of this mill, which has been recently developed, enables the motor to be direct connected to the high speed shaft. The shafts of the double reduction herringbone gears are carried in roller bearings, the seats of which are bored in a jig to a tolerance of 3/1000 of an inch. The gears cannot be misaligned or set wrong, and this

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greatly reduces the power required to drive a mill. The new Kennedy Integral gear drive can be used on Combination Ball Mills, Wet Grinding Tube Mills, Dry Grinding Tube Mills, and Air Swept Tube Mills.

COMPLETE CEMENT, ROCK CRUSHING, SAND AND GRAVEL, LIME AND DOLOMITE PLANTS

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Mills.

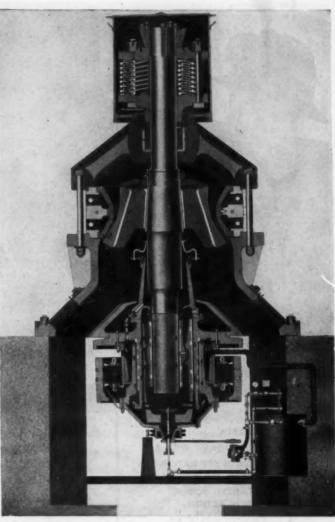
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These vibrating screens give positive action on the screen cloth without transmitting vibration to supporting members. They are made in a wide variety of sizes with single or double decks and to meet any screening requirements. The type of vibration used permits lower speeds for large pieces and higher speeds for small pieces. Material is continually turned over when passing along the screen surfaces. In this way, exceptionally high efficiency is obtained at all times.

KENNEDY ROTARY KILNS

Shown here is a Kennedy $10^{\prime} \times 9^{\prime} \times 250^{\prime}$ rotary kiln mounted on four riding rings. Kilns are of all-welded steel construction and are driven through a totally enclosed herringbone gear reducer. All materials are especially selected to suit the work for which they are intended. All wearing parts are carefully machined to ensure true-fit and best operation.



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With a Synchronous Motor built in its pulley, this machine shows 80% saving in the cost of maintenance and a saving of 50% in power over geared crushers. It has produced 156 tons per hour when set to $\frac{\tau}{16}$ between the head and concaves at the bottom. The motor runs on ball bearings and is continuously lubricated by a force feed lubrication system. The motor is built especially for this crusher.

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Positive, short-travel valve action gets full power from ALL the air that enters Thor Rock Drills to provide stronger rotation and exceptional hole-cleaning ability. This is why Thor Drifter Rock Drills give more footage per shift and one of the reasons for their extra drilling speed.

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But just for a minute, we'd like you to forget shortages and conjure up some pleasant memories. Memories of jobs like Radio City, Boulder Dam, Golden Gate Bridge, and many, many others. Because, in thinking back, you'll also be peering into the future . . . taking a private peek at things to come.

In the projects of tomorrow,

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And on those jobs of yours that need a highly flexible line, you're going to want Purple Strand Form-Set (preformed). Every Form-Set line has been preconditioned for easy bending; for applications on small sheaves and drums. You'll like the extra service it gives—the extra life that comes from its high resistance to bending fatigue.

Perhaps we've been telling you a lot of things you already know. If not, better let a Bethlehem man give you the full story.



When you think WIRE ROPE . . . think BETHLEHEM



This one man can load and stack 400 lbs. in Multiwall Bags as fast as . . .



two men can handle a single 400 lb. drum.*

* Report from large chemical manufacturer. Name on request.

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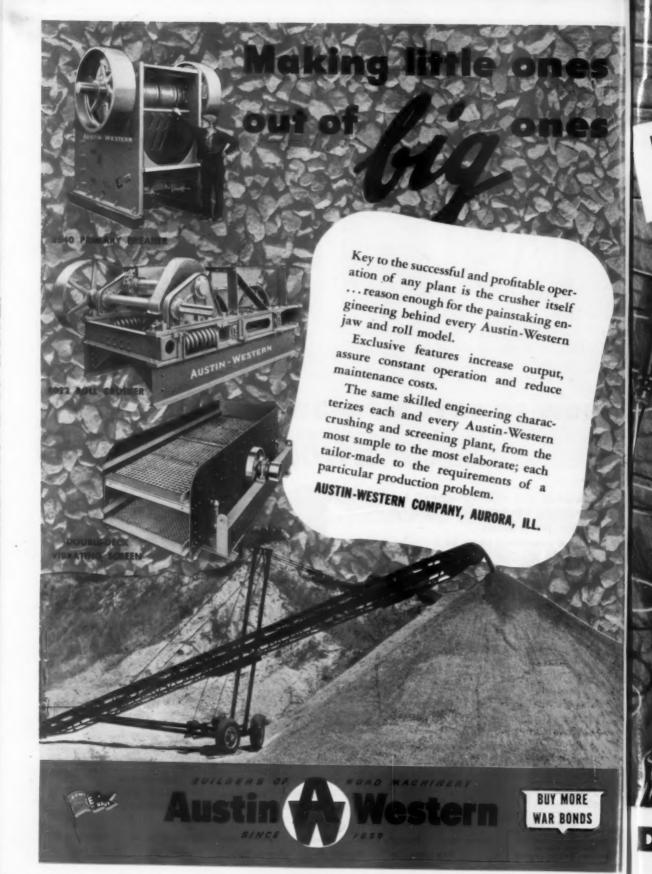
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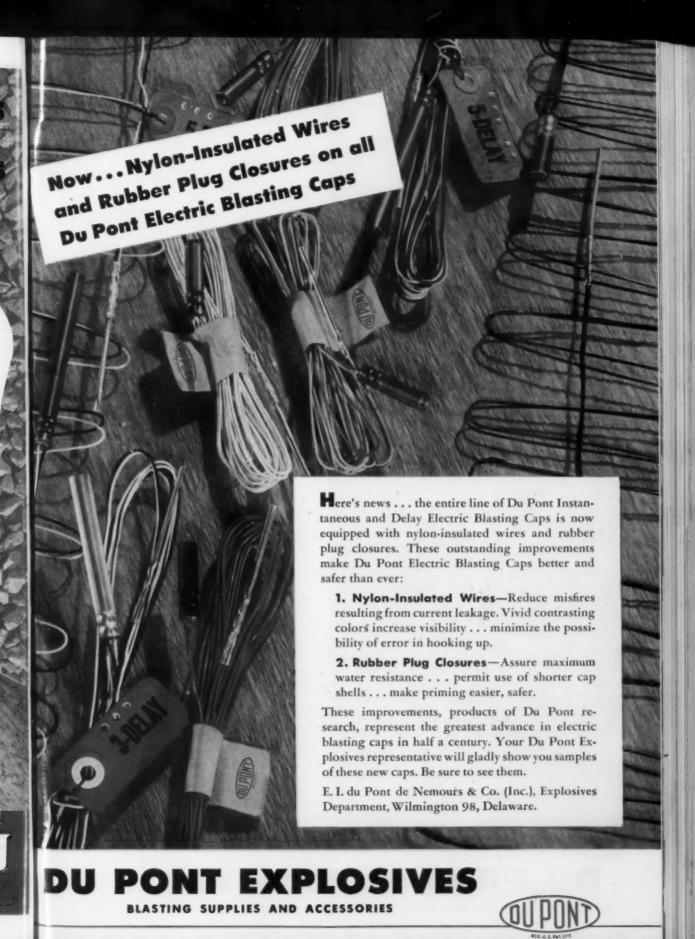
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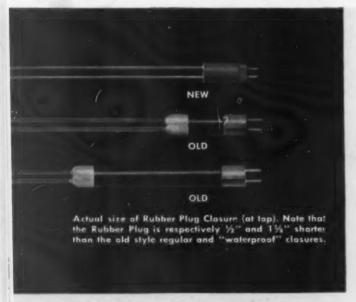
No. Kansas City, Mo. Nazareth, Pa.

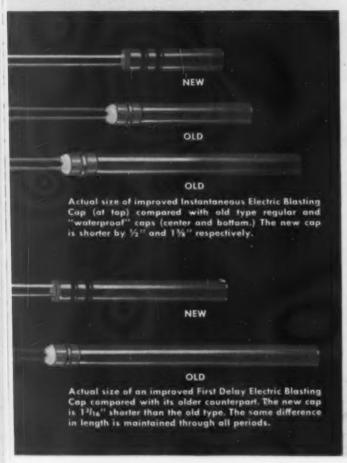
Los Angeles, Calif. Toledo, Ohio





These exclusive features





make Du Pont **Electric Blasting Cap** safer and better

• Today, when increased production is vital to the war effort, two important i provements in Du Pont Electric Blasting Ca are helping industry do the job faster a safer. Here are the details:

Nylon-Insulated Wires-Nylon plast Sand & wire covering is tough and abrasion-resistate of cut ... and it is not affected by extreme or rap than 3 changes in temperature. It is equal to enamer a insulation in preventing current leakage . rushe yet, when necessary, it is readily removed for eplace. making connections. Nylon-insulated with only hare clean to handle and resist kinking. Broroduc liant colors make them easy to see.

Rubber Plug Closures—These plugs, do per he sand. ble crimped in the shells, replace the form and m combination of bridge plug, asphaltic water In a proofing compound and sulfur seal. The Recipi allows a substantial reduction in shell leng Break without any reduction in explosive strengt No. 7
Shorter shells make priming easier and the aggregation loading of primers safer. Rubber plug can have far greater water resistance than of sult T style, asphalt-sealed "waterproof" caps .. 6-12 and their performance is not affected by e tremes of temperature.

These exclusive features make Du Pol Electric Blasting Caps more dependable tha ever. And the most dependable detonators a the safest detonators. So don't run the risk misfires . . . use Du Pont Caps.

E. I. du Pont de Nemours & Co. (Inc.), Explo sives Department, Wilmington 98, Delawar

Note: Nylon and rubber are allocated for the above described purposes by the War Production Board.

DU PONT EXPLOSIVES

BLASTING SUPPLIES AND ACCESSORIES



The

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plast Sand & Gravel Co. of Hartland, Wis., is always on the alert resistate cut costs. Primary and secondary crushers of various or rap makes were tried... without getting satisfactory economy.

Then they got Telsmith Crushers—and results! Producing enam more aggregate in 8 months of 1944 than in all of 1943, all

Cap

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Du Por ble tha ators a e risk

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kage . rusher trouble was eliminated.

Noved f When the 36" Telsmith Gyrasphere Secondary Crusher replaced a 40 x 24 roll crusher and a reduction crushered with only half as much power was required. And not only was ng. Br production increased but the product was better suited to he market.

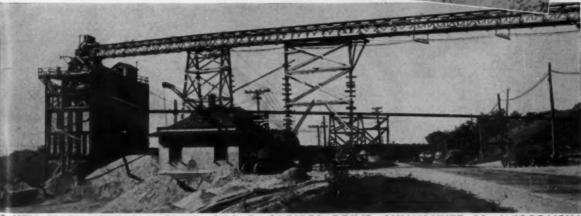
The plant's present output is about 130 tons of aggregate ngs, do per hour, which runs approximately 60% rock and 40% and. Three sizes of gravel and one size of stone chips, e form and mason and concrete sand are produced.

ic wate In addition to the No. 36 Telsmith Gyrasphere Secondary al. The Crusher (right) other Telsmith equipment includes: 24" Il leng Breaker, two 40" x 14' Heavy Duty Washing Screens and a strengt No. 7 Sand Tank. This producer also operates several other and thaggregate plants in Wisconsin-all using some Telsmith

lug cal equipment.

Modernizing, expanding, or planning a new plant—conhan o sult Telsmith engineers. Get Bulletin G-11.

No. 36 Telsmith Gyrasphere Secondary Crusher



MITH ENGINEERING WORKS, 508 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Addresses: Sengworks, Milwaukee-Concrete, London

51 East 42nd St. New York 17, N. Y.

211 W. Wacker Drive Chicago 6, Ill.

713 Commercial Trust Bidg. Philadelphia 2, Pa.

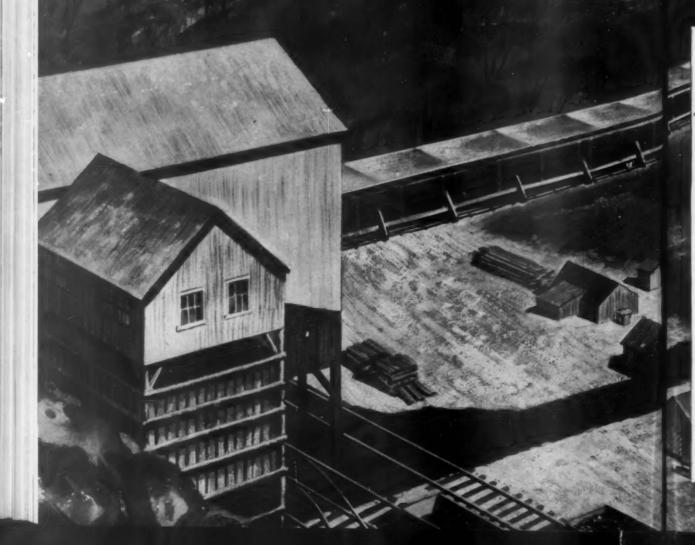
Boehck Eqpt. Co.
Milwaukee 3, Wis.

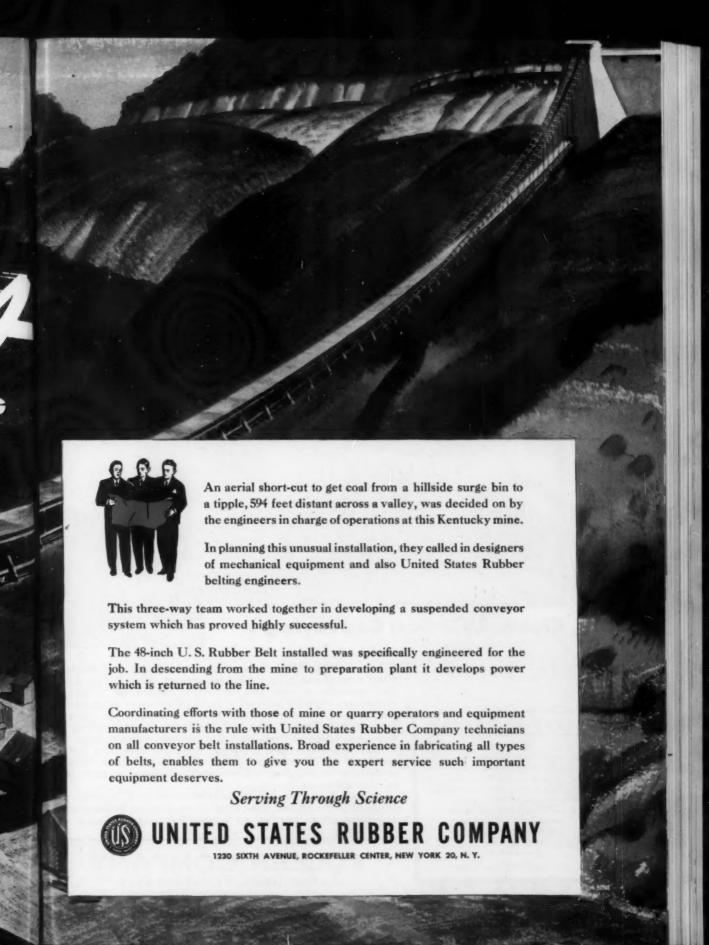
Mines Eng. & Eqpt. Co.
Mines Eng. & Eqpt. Co.
Mines Eng. & Eqpt. Co. Brandels M. & S. Co.
Louisville 8, Ky.

Rish Equipment Co.
Rish Equipment Co.
Roanoke 7, & Richmond 10, Va.
Raleigh and Charlotte 1, N. C.
Knoxville 8, & Nashville 6, Tenn.

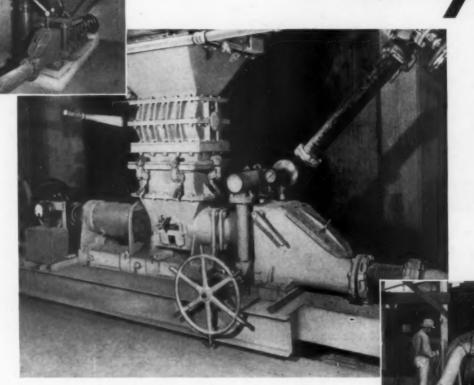
Air Express

THROUGH COORDINATED ENGINEERING





Fuller-Kinyon Pumps



Safe, Clean, Low-Cost Conveying

FULLER EQUIPMENT

Fuller-Kinyon Conveying Systems
Fuller-Fluxo Conveying System
The Airveyor Conveying System
Rotary Compressors and Vacuum Pumps
Air-Quenching Inclined-Grate Coolers
Dry Fulverised-Material Coolers
Rotary Feeders and Gate Valves
Material-Level Indicators
Motion Safety Switch
Aeration Units
Slurry Valves

Samplers

When your problem is conveying dry pulverized materials your money can't buy a better system than Fuller-Kinyon Built in various types and for various capacities. There's the stationary type for conveying from pulverizers, bins, collected screws and hopper-bottom cars. Portable for conveying from silos. Remote-Control Unloader for unloading from box cars, ships, barges and flat-bottom storage bins.

Systems have been installed for capacities of a few tone per hour to 300 tons per hour . . . distances to 5000 feet elevations to 500 feet. The system however is not limited to this distance.

Installation involves no interference with normal plant production or layout, pipe lines for conveying being installed underground or carried on simple hangers overhead.

FULLER COMPANY

CATASAUQUA, PENNSYLVANIA

CHICAGO 3 · 1144 Marquette Bldg.

SAN FRANCISCO 4 · 421 Chancery Bldg.

WASHINGTON 5 · 618 Colorado Bldg.



In quarrying, construction, metal mining, users of Hercomite* and Gelamite* are currently saving-10% to 15% of powder costs compared with older types of explosives.

Whenever their use is indicated, Hercomite and Gelamite give maximum breakage for every dollar. Proof of their efficiency and economy is to be found in their widespread use, both on the surface and underground. These high-cartridge count explosives are now more popular than ever before.

Originated by Hercules, Hercomite and delamite are only one example of many outstanding Hercules developments in the field of explosives.



HERCULES POWDER COMPANY

946 KING STREET WILMINGTON, DELAWARE

*Reg. U. S. Pat. Off. by Hercules Powder Company

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plant

Bldg.

XR-52



- Feed More than a 24"x 36" Jaw can take
- Product . . More agricultural lime (and Road Rock too)
- Crusher . . A Gruendler 6XC Hammermill

True, the Gruendler Company also builds JAW CRUSHERS and ROLL CRUSHERS,—the kind that stand up and take it on the toughest kind of material. But for this type of rock plant, we believe the versatile Gruendler Hammermill is Best. No other type of Unit can do both jobs so well. Let Gruendler's 60 Years Experience recommend the right Equipment for your plant. YOU'LL BE SURPRISED WHEN YOU COMPARE POWER, PRICE AND PRODUCTION.

GRUENDLER CRUER

CRUSHER and PULVERIZER CO., ST. LOUIS 6, MO.



with AGGREGATE from a CEDARAPIDS MASTER TANDEM

When the ban on building general highways is lifted, you will get your opportunity to help build postwar prosperity. Then a Cedarapids plant that is flexible enough to meet so many requirements will put you in the most favorable position for bidding on contracts. Take the Master Tandem, for instance, with its maximum production of uniform, graded products which can economically meet a variety of modern specifications. It delivers greater tonnage in less time, with more hours of trouble-free operation and at less cost, because it has ALL the features to meet these requirements. In the Master Tandem, Cedarapids again demonstrates its leadership in the aggregate and asphalt plant equipment industry.

IOWA MANUFACTURING COMPANY



THE IOWA LINE

of Material Handling Equipment Includes

ROCK AND GRAVEL CRUSHERS BELT CONVEYORS—STEEL BINS BUCKET ELEVATORS VIBRATOR AND REVOLVING

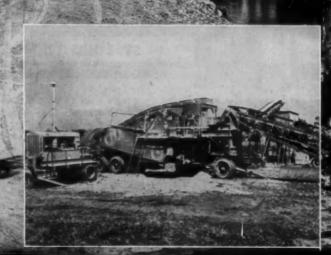
SCREENS STRAIGHT LINE ROCK AND

GRAVEL PLANTS
FEEDERS — TRAPS
PORTABLE POWER CONVEYORS
PORTABLE STONE PLANTS

PORTABLE GRAVEL PLANTS
REDUCTION CRUSHERS
BATCH TYPE ASPHALT PLANTS
TRAVELING (ROAD MIX)

PLANTS
DRAG SCRAPER TANKS
WASHING PLANTS
TRACTOR-CRUSHER PLANTS

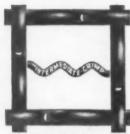
STEEL TRUCKS AND TRAILERS
KUBIT IMPACT BREAKERS



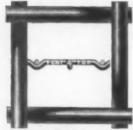




Arch-Crimp



Intermediate-Crimp



Flat-Top

Wire Cloths and Screens

We have been specialists for many years in the making of precision wire cloths, wire screens and woven wire products.

We apply our same precision principles in fabricating wire cloths into finished industrial units, for production or processing equipments or for permanent parts of countless industrial products.

We invite your inquiries for wire cloths of all commercial metals or alloys or weaves, in continuous lengths or cut to size, or processed to meet your individual require-

alloys and
metals
Super-Loy
Steel
Galvanized
Tinned
Stainless Steel
Nickel-Chro-
mium Alloys
Aluminum

"Perfect"

Brass Bronze Commercial Phosphor Monel Metal Nickel

Copper Any special alloys available in rod or wire form

"Perfect" Wire Cloth weaves

Arch-Crimp Coiled Double-Crimp Double-Fill Dutch Filter Flat-Top Herringbone-Twill Intermediate-Rek-Tang Selvage-Edge

Straight-Warp Stranded Sta-Tru Triple-Warp Twilled Twisted-Fill Twisted-Warp

or we will submit suggestions for your approval.

"Perfect" Wire Cloth processing

Bending Binding Brazing Calendering Clinching Cutting Dipping Dishing Flanging Flattening Forming Framing Galvanizing Painting

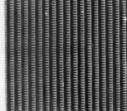
Shearing Slitting Trimming Arc-Welding Gas-Welding Spot-Welding

"Perfect" Wire Cloth products

Baskets Circles Cones Crates Cylinders Discs Forms Leaves Lengths Panels Pieces Racks Ribbons Rolls Sections Segments Spacers Strips

Trays

Template shapes We will follow your specifications and blue-prints exactly as your production engineers have prepared them-



Galvanized

Dutch Weave

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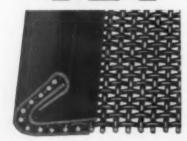
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THE LUDLOW-SAYLOR WIRE CO.

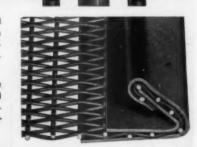
Sta-Tru

ST. LOUIS 10, MISSOURI



LUDLOW-SAYLOR PRECISION FABRICATING makes vibrating-screen decks and jackets that are easily handled-quickly installed-need fewer adjustments and renewals.

Illustrations suggest only a few of the many available types of wire cloth and woven wire screens, which may be custom-finished with attachments to fit your particular processing installations.







THIS versatile Barber-Greene Bucket Loader is a valuable job-coordinating unit in pit and quarry.

You can save money by processing aggregate at a uniform rate, even during "off" seasons, and storing it is stockpiles.

A Barber-Greene will reload it into trucks, whenever needed, at exceptionally low cost. In fact, many operators have found that the saving in truck time alone justifies its purchase.

Continuous handling by the B-G Loader is extremely advantageous in feeding material to processing equipment - screens, crushers, belt convevors.

The B-G Bucket Loader also can be used for stripping, light excavating, screening, and many other cost-saving applications.

Full crawler mounting, tank type chassis, automatic overload release. synchronized spiral feeding, floating boom, centralized control, and 12 crowding speeds are but a few of the advanced mechanical features that give the B-G Loader long life and fine performance under the rigors of heavy, steady work. Consult your B-G representative or write the Barber-Greene Company, Aurora, Illinois.

Barber Greene (B) Constant Flow Equipment



The MARION 4161—Ward Leonard—Electric Shovel has been in successful operation for years, digging ore—rock—slag—coal and aggregates for dam construction where YARDAGE is figured "in the millions" and production costs are figured to the fraction of a cent.

MARIONS PRODUCE MAXIMUM YARDAGE at minimum cost. Let us help you with your material handling problem.

THE MARION STEAM SHOVEL COMPANY, MARION, OHIO

Modernize with

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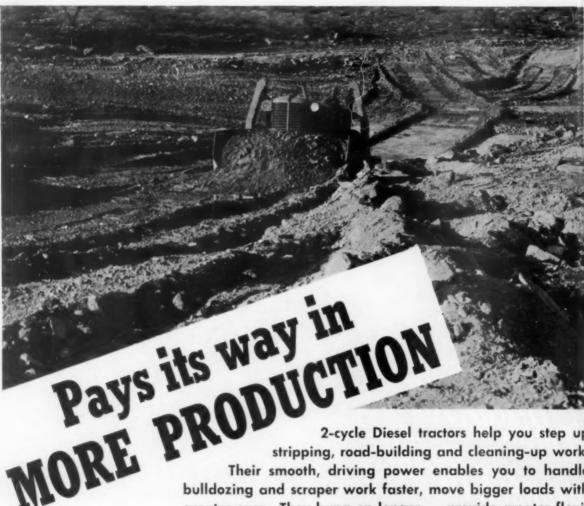
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Greene

44-28

MARION

SHOVELS . DRAGLINES . CRANES . CLAMSHELLS . WALKERS . PULL-SHOVELS



Tough, rocky soil yields to the smooth, fast power of an Allis-Chalmers Diesel tractor. Here the Model HD-10, with a Baker bulldozer, strips a wide area of this material.

2-cycle Diesel tractors help you step up stripping, road-building and cleaning-up work. Their smooth, driving power enables you to handle bulldozing and scraper work faster, move bigger loads with greater ease. They hang on longer — provide greater flexibility in speed with less shifting, because drawbar pull is maintained over a wider speed range.

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WEIGHT

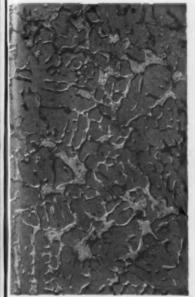
≥ 25

Maintenance is simple! Uniform design and manufacture permit convenient interchange of engine parts between all models - sleeves, pistons, rings, connecting rods, injectors and many others. Reduces parts inventory, saves time and money, simplifies repairs — of particular advantage when operating in remote areas.

It will pay you to investigate the many EXTRA advantages 2-cycle Diesels provide.

THE MODERN DIESEL POWER

How RPM DELO Eliminates Diesel Bearing Corrosion





This is what happens to a copper-lead bearing when unstable lubricating oils that become corrosive, attack the lead. The picture on left shows a greatly enlarged cross-section of a new bearing, the copper in red, and lead in light grey. The picture on right shows the same type of bearing with the lead (light grey) eaten away from the surface by corrosion, leaving a copper honeycomb which disintegrates under pressure. RPM DELO Diesel Engine Lubricating Oil eliminates such corrosion of copper-lead or any kind of bearing.



This chart shows what happens when copperlead bearing strips are placed in oil which is subjected to oxidizing conditions at a temperature of 280°F. Note the extremely low weight loss with RPM DELO by comparison with other oils, compounded or uncompounded.

PERCENT OF TEST PERIOD

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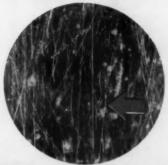
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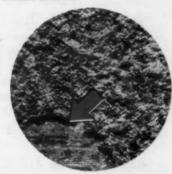
This photo shows equipment used in a 500-hour test on RPM DELO by Standard's research organization—RPM DELO has met every laboratory and field test. For specific technical information, write, asking for booklet T-2, Standard of California, San Francisco 20, Calif.



This is a greatly enlarged photograph of a cadmium-silver bearing when new. The arrow points to slight scratches from the broaching tool.



The same type of bearing is shown here, after use with RPM DELO. The bearing surface is in excellent condition.



This bearing was used with an unstable lubricating oil that became corrosive in service. Note that the entire surface is pocked and that actual breakdown is occurring on the surface. This can be eliminated by the use of RPM DELO.



STANDARD OF CALIFORNIA

RPM DELO has world-wide distribution and is marketed under the following names: RPM DELO, Caltex RPM DELO, Kyso RPM DELO, Signal RPM DELO, Sohio RPM DELO, Imperial RPM DELO



• Smith-Mobile Truck Mixer provides a fast, controlled discharge even when the machine is on a steep incline. The patented T-shaped blades scoop up the thoroughly mixed concrete and carry it swiftly to the discharge opening, without segregation. The speed of the drum controls the speed of discharge and a smooth steady flow results, even on an up-grade.

Smith was the FIRST truck mixer manufacturer to introduce a HIGH DISCHARGE model, eliminating the need for a rear-end hoist with its original extra cost, dead load and maintenance expense. And Smith-Mobile pioneered many other time-tested truck mixer features. It will pay you to investigate. Write today for Catalog No. 198-C.

The T. L. SMITH CO., 2885 N. 32nd St., Milwaukee 10, Wis.

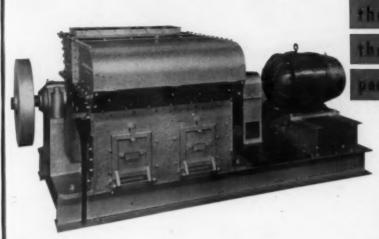


The illustration above shows a No. 4 Smith-Mobile, one of a fleet operated by Western Concrete and Equipment Company and used in the construction of a Southern California war plant. This Smith-Mobile is discharging concrete into a high floor hopper. The ramp is a 14° grade and the axis of the mixer drum is 18° from horizontal — yet the speed of discharge is NOT seriously affected by this steep incline.

SMITH-MOBILE

The ORIGINAL HIGH DISCHARGE Truck Mixer and Agitator

MMERMILLS give you the muchine



IXIE specializes in Hammermills: hammermills that vary in size, type, design and special features all the way from the small, efficient Premier Junior to the huge 1000 ton per hour Model 9672 Non-Clog Mogul Ham-

operating conditions

iar to your own plant.

mermill. Dixie does not carry hammermills in stock; all are made to order. Every Dixie installation is designed to fit the particular job on which it is to be used.

By using a hammermill fitted for your plant the Dixie way, you get maximum efficiency because Dixie also can offer the features of advanced hammermill design . . . features such as the Non-Clog moveable breaker plate, the adjustable front end. Such features combined with the simple, sturdy construction of Dixie Hammermills make it possible for our engineers to fit your needs from the most varied line of hammermills being made today.

Whether your interest is in specification-true agricultural limestone, cubical-shaped aggregates, or economical secondary reduction you should have a machine tailored to be a truly coordinated part of your entire operations. Our engineers, who are specially trained for such activity, will help you fit the right kind of machine to your operations. Why not let us get to

work on your problems today.

DIXIE HAMMERMILL

ern l in

. . . the Perfect Machine for **Making Agricultural Limestone**

DIXIE NON-CLOG HAMMERMILL-Manufactured in 14 sizes up to 1000 tons per hour. adapted to reduction of any materials containing moisture without clogging.

DIXIE MOGUL—Designed to handle up to 30 cubical inch pieces of hard limestone and reduce to any desired finished product.

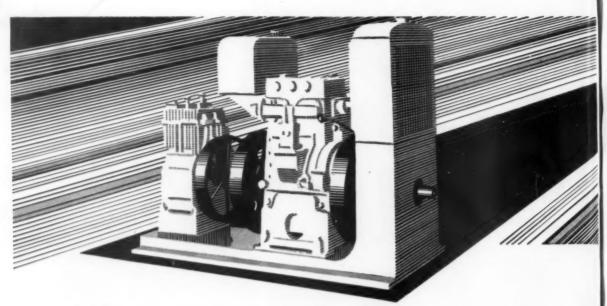
DIXIE MOGUL JUNIOR—Designed to handle up to 75 to 100 lb. pieces of hard limestone and reduce to any desired finished product.

DIXIE PREMIER JUNIOR—Designed to handle up to 40 to 50 lb. hard limestone, reduce to any desired finished products.

DIXIE

MACHINERY MFG. CO.

4202 GOODFELLOW BLVD. ST. LOUIS, MO.



Chrome·lined Donkey·engine

The donkey-engine, though small, is a "man of all work"... on shipboard, in the mine, on construction jobs, in the oil fields and even on farms. Wherever there are tough jobs to do, we find the donkey-engine doing them.

Plain in appearance and with no fancy trim, these sturdy little work engines are nevertheless becoming large users of chromium, the modern decorative metal. But the donkey-engines don't use chromium for decoration, unless it is a "decoration" for greater reliability and lower maintenance cost. For the chromium they use is inside the cylinder . . . a chrome-lining . . . PORUS-KROME.

PORUS-KROME is hard, pure chromium which is applied to cylinder bores by the patented Van der Horst process. It has tiny pores and channels in its surface which serve as reservoirs for lubricating oil, feeding it back to the surface as needed. It reduces corrosion and wear and multiplies cylinder life 4 to 20 times, and ring life 3 to 4 times.

Every type of heavy-duty engine needs and uses Porus-Krome . . . bus, truck, tractor, locomotive, marine, stationary power plants . . . large and small . . . even donkey-engines.

You would expect that anything as good as Porus-Krome would be used by the Army and Navy. It is ... in engines for submarines, destroyer escorts, mine sweepers, landing craft, tanks and airplanes. Right now, the entire production of the three Van der Horst plants is devoted to this work.

But someday soon, you too, can have Porus-KROME. In the meantime, why not investigate the advantages Porus-Krome will give your engines?

PORUS – KROME

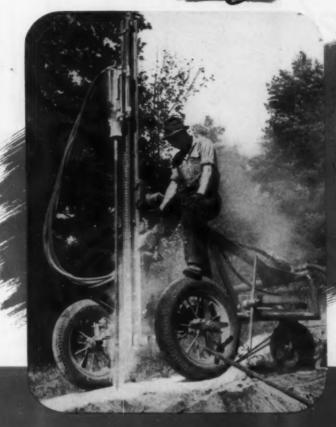


Good for the Life of your Engines



VAN DER HORST CORPORATION OF AMERICA CLEVELAND 11. OHIO

FOR THOSE Touch DRILLING JOBS!



THE
SULLIVAN
UNIVERSAL
WAGON
DRILL

Every construction men knows that a difficult drilling job can tie up an entire project and throw the complete schedule off. It's that kind of a drilling job that's made to order for the Sullivan Universal, a medium-weight rig that takes the tough jobs right in stricts.

The Sullivan Universal has four exclusive features that will help you finish your tough jobs on time and will do it at lower cost. Check these teatures now; see how they can mean more footage drilled per shift and lower upkeep costs. Then, be sure your next wagon drill has every one of these outstanding features:

BRAKES—Make moving quicker and easier and reduces setup time. Increases footage per shift because more time is allowed for actual drilling. "A" FRAME—Braced support of "A" name besures rigid support at all drilling positions. Result: Fewer broken steels.

HYDRAULIC CONTROL—Permits quick easy positioning of drill and feed. Hydraulic fift eas move drill, feed and supporting arm from ground level to 6 feet in the air. No worm goars, cranks or hand operated hoists are necessary.

SULLIVAN "PISTONMOTOR" FEED—Especially designed for rock drills only. Efficient controls permit quick retraction of drill steel for any variation of speed and pressure.

Bulletin 87-T-1 describes these, and administratives in detail. Write to the nearest Sullivorifice for your copy. Sullivan Machinery Co. Michigan City, Ind. IN CANADA: Canadis Sullivan Machinery Co., Ltd., Dundas, Onter

SULLIVAN

CONTRACTORS' EQUIPMENT PROVED THE WORLD OVER FACTORIES: MICHIGAN CITY, IND. CLAREMONT, N. N.

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YORK

· OHIO

PRODUCTS: ** seriable Compressors ** Stationary Compressor ** Rock
Drills ** Wagen Drills ** Core Drills ** Portable Hoists ** Spaders ** Paving
Breakers ** Trench Diggers ** Sheeting Drivers ** and other Pneumatic Tools.

IT GETS UNISHED BECAUSE IT'S GOOD!

1) YES, HERE'S CHAIN BELT that's so extra good we recommend it for punishing service. Tough operating conditions . . . heavy loads . . . shocks . . . Rex Chabelco steel chain belts take them right in stride. They keep going long after ordinary chains are out of service.



2) FOR TOUGH SERVICE CONDITIONS. the chain operation on this conveyor drive is hard to beat. Dust, grit, and shock loads really test a chain's mettle. But the Rex steel chain belts driving the conveyor keep right on rolling . . . transmitting positive power and carrying the load smoothly and efficiently. But what makes them so tough?

(3) HERE'S THE ANSWER. Take a good look at the cross-section of this Chabelco link. Note particularly the three-diameter pin. See how its milled flat end is locked in the side bar. Notice the offset side bar construction. Heavy force fits of precision machined parts result in the finest quality chains.

Rex Chabelco steel chain belts are the answer to drive and conveyor problems where strength and long life are essential. The Rex Man will help you with your chain belt application problems. And for engineering data on Rex chain belts, ask for the 768-page catalog, No. 444. Chain Belt Company, 1649 W. Bruce St., Milwaukee 4, Wis.

36

or Pin and Cotter eter Pin for Carbon or Alloy Easy Assembly. Construction. Steel.

Carbon or Alloy

Steel Pins, Riveted

Selected Steels Are Used in the Rollers.

Side Bars of High

Hardened Bushings Locked in the Side Bars.

Accurate Pitch Assured by Close Tolerances.

Three Diam-

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Manufactured in every available type for the positive transmission of power, timing of operations and conveying of materials.

It pays to be a Bemis Multiwall paper bag Customer

EVEN though direct government purchases have taken a considerable part of our multiwall paper bag production this year, Bemis customers have not suffered . . . they have been supplied on the basis of past purchases, even in the face of the labor shortage and no increase in facilities.

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Pitch

Close

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erials.

Naturally, the demand for Multiwalls has been greater than the supply. Much as we regret inability to fill all orders, we have felt a responsibility to take care of our regular customers first. Fortunately, we've been able to do that—and right on schedule. If it's humanly possible, we'll keep on maintaining this service.

War or peace, we want our customers to feel that it pays to be Bemis customers. BEMIS
MULTIWALL
PAPER
SHIPPING SACKS

Pasted and
Sewn Types
Valved or
Open-Mouth

NORTH

 $\stackrel{\uparrow}{\longleftrightarrow}$

EAST

SOUTH

A major reason we've been able to supply our Multiwall customers is the size and flexibility of our production facilities.

Bemis Multiwall Plants at

PEORIA, ILL.
EAST PEPPERELL, MASS.
MOBILE, ALA.
SAN FRANCISCO, CALIF.
WILMINGTON, CALIF.
ST. HELENS, ORE.

These plants not only give us large production, but also quick accessibility to all parts of the country.

BEMIS BRO. BAG CO.

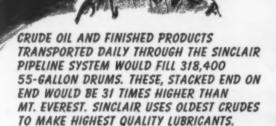
Baltimore - Boston - Brooklyn - Buffalo - Charlotte - Chicago - Denver Detroit - Houston - Indianapolis - Kansas City - Los Angeles - Louisvill Minneapolis - New Orleans - New York City - Norfolk - Okla homa City - Omaba - St. Louis - Salina - Salt Lake City - Seattle - Wichity



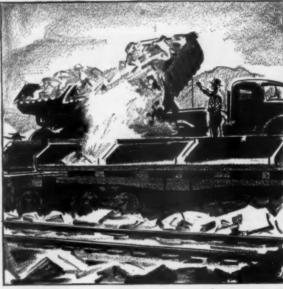
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Do you know that ...

AMERICAN AIRLINES INC. UNDER CONTRACT
TO THE AIR TRANSPORT COMMAND HAS MADE
MORE THAN 4300 TRANSATLANTIC CROSSINGS
... FOR LUBRICATION OF ITS GREAT FLAGSHIP
FLEET, AMERICAN USES SINCLAIR
PENNSYLVANIA MOTOR OIL.







PROTECTION AGAINST EXCESSIVE WEAR AND SHOP LAY-UPS IS PROVIDED FOR HARD-WORKED EQUIP-MENT BY SINCLAIR SPECIALIZED MOTOR OILS AND GREASES. TEN-OL 200 IS A NEW OIL FOR BETTER LUBRICATION OF DIESEL-POWERED EQUIPMENT.

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IS EQUIPPED TO SERVE YOU BETTER!

FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.



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STOODY SELF-HARDENING

POSTPONES POWER SHOVEL OVERHAULS

LOWERS OVERHEAD COSTS

There's no easier way to postpone power shovel overhauls than to strike directly at the major cause of repairs. Abrasion, constantly gnawing away the life of moving parts and enforcing premature overhauls, might never be completely eliminated; but its destructive action can be greatly retarded with Stoody Self-Hardening, resulting in less downtime, fewer replacements and more cubic yards of material

moved between overhauls. Wear resistance of Stoody Self-Hardening is double that of ordinary manganese steels and it takes so little to get maximum effective wear resistance. This is true because on large areas needing protection Stoody Self-Hardening need not be applied solidly but should be deposited in stringer beads spaced

PUT STOODY SELF-HARDENING TO WORK ON YOUR SHOVEL PARTS NOW! Here's where you

need maximium protection:

11/2" apart. Spacing saves 75% of the hard-facing metal and numerous hours of welding time, yet provides wear resistance comparable to solid deposits,

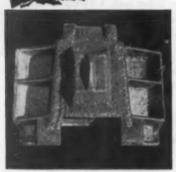
And when the Self-Hardening is worn away, your shovel parts are still in excellent shape . . . need only another application of Stoody Self-Hardening to restore them to better than new condition!



BUCKET TEETH. Stoody Self-Hardening stringers keep bucket teeth sharp and out to When applied parallel to tooth travel, maximum resistance to impact will result. Avoid solid deposits on teeth.



BUCKET LIPS AND RUNNERS. On large areas run single beads of Stoody Self-Hardening parallel to bucket travel when handling coarse materials; apply checkerboard patterns for maximum wear protection from



TRACK PADS. Prevent wear on pad lugs and maintain original size and shape with solid Stoody Self-Hardening deposits on inside lug faces and leading and trailing edges. Roller paths should be similarly hard-faced.



TRACK ROLLERS. A single layer of Stoody Self-Hardening keeps track rollers out to size almost indefinitely, reduces track slapping due to roller rim wear and keeps shovel weight off idlers and tumblers.



DRIVE TUMBLERS AND IDLERS. Lugs on drive tumblers mesh more accurately with track pad lugs when kept out to size with Stoody Self-Hardening. Wear is greatly reduced because of lower coefficient of friction. Idlers are maintained rounder and truer when working in fixed positions.

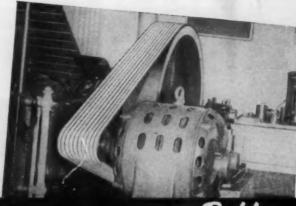
Many other equipment-saving applications with Stoody Self-Hardening are described in our booklets, "Stoody Specification Sheets" and "Hard-Facing, Industry's Weapon Against Wear"-write for free copies!

STOODY COMPANY

1129 WEST SLAUSON AVE., WHITTIER, CALIFORNIA

STOODY HARD-FACING ALLOYS Retard wear ... Save Repair





GATES Synthetic Rub

-are TODAY Giving BETTER SERVICE Than ANY V-Belts Built Before the War!

could stand the service that is now being delivered on the batt V-Belts that Gates has developed especially for these heavy come And Gates is building these V-Belts entirely of synthetic rubber.

* The fact that Gates developed the ing them of synthetic because the synthetic rubber. When our Army's tanks, tractors and self-propelled big guns were being built, it was found that no V-Belts built by anyone before the war could stand the service that is now being delivered on the battlefield by V-Belts that Cates has developed any being delivered on the battlefield by V-Belts that Gates has developed especially for these heavy combat units.

The fact that Gates developed these belts-and is building them of synthetic rubber-is important to you now because every improvement developed by Gates for these Army belts has also been added, day by day, to the quality of the Standard Gates Vulco Ropes which are being delivered to you.

As you know, wartime improvements in many other products must be withheld from general use until after the war is won-but victory depends so directly upon production, and production so directly upon V-Belts which drive the producing machines, that Gates has been able to give you immediately in your Standard Gates Vulco Ropes, every V-Belt improvement which Gates specialized research has developed for use on the Army's motorized equipment.

These are the simple reasons why you are finding that your Standard Gates synthetic rubber Vulco Ropes are today giving you better service than any V-Belts that were ever built before the war.



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HAZARD LAY-SET Preformed WIRE ROPE

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WHERE WILL VETERANS FIT?

NDUSTRY has expressed its sincere purpose to cooperate in the re-employment and rehabilitation of war veterans, but far too few concerns recognize that time is running out for the completion of specific, detailed plans to absorb these men. Small concerns in particular do not appreciate the multiplicity of problems that will present themselves with mass demobilization. Industry is likely to lay itself wide open to public criticism if it is found unprepared to meet the challenge.

There is far more to this problem than patriotic desire to comply with Selective Service re-employment provisions. There are practical, business aspects to it. Legal and moral obligations demand first attention, but some companies, and entire industries, conceivably will face competition for labor with government works projects after the war. Getting sufficient qualified workers rather than finding or making jobs for men might become the number one challenge with a record-breaking post-war boom.

Industrial concerns have already discovered, by surveys, that a considerable proportion of their servicemen will not desire to return to their old jobs. The majority of servicemen under 28 years of age are looking for a change, according to one of the surveys we have examined. And, so far, only 25 percent of all the veterans discharged are seeking their pre-war jobs.

Veterans Have Specialized

Industry cannot think of servicemen in terms of resuming their old work. Mechanized warfare has developed new skills and aptitudes in many men, which could be of inestimable value to the rock products industry. Thousands of young men in the Seabees and the Army Engineers have been trained in the actual operation of crushing and screening plants on the fighting fronts.

Machinist's Mate C. A. Sanborn, an executive of a crushed stone company in civilian life, strongly recommended the qualifications of the crusher crews in the Seabees, before the New York City convention of the National Crushed Stone Association. Men have been thoroughly trained in the operation and maintenance of drilling equipment, crushers, screens, etc. They have been taught the theory and practice of stripping, excavating and processing of aggregates. These men, if absorbed in the rock products industries, would not require specialized schooling.

Organized effort might well be directed toward acquainting this class of specially-skilled men with the rock products industry and its opportunities. Rock Products is endeavoring to do its small part by

sending appropriate special issues and reprints to the Army Services Forces where they may be studied by convalescents.

Plan With Servicemen

Therefore, we plug again for more advance planning. The only way to find out what servicemen are thinking about is to keep in contact with them. Working with the servicemen through correspondence is a great morale builder and a source of invaluable information to guide concerns in planning their postwar activities.

Some of the big industrial concerns have gone so far as to furnish their servicemen data on the qualifications for jobs in various departments, for consideration along with their new skills, and, through correspondence interchange, have secured information to be utilized in the preparation of accelerated training courses.

When war veterans do return, trained interviewers should consider each man individually in order to place him where he is best fitted. Some of the individuals will present ticklish social and psychological problems in readjustment. The hardships they have endured will have worked changes in many individuals. A variety of new aptitudes are coming out of participation in this global war and plants may have to be manned with a high ratio of war veterans to total employment. Industry will find itself faced by a variety of new ailments.

The Handicapped

The handicapped cannot and must not be overlooked although, admittedly, many jobs (but not all) in rock products plants demand able-bodied employes. Handicapped workers, generally, are diligent, they have a low rate of absenteeism and a higher than average productivity. A survey by the National Industrial Conference Board disclosed that the accident frequency rate for able-bodied employes exceeds that for handicapped workers by 600 percent.

The foreman is the key man, since he is the man in direct contact with all workers. An excellent booklet, entitled "You and the Ex-Serviceman," has been distributed to all foremen by John A. Roebling's Sons Co. of Trenton, N. J. It defines company policy and, particularly for its content on psychological factors, would be recommended reading.

Brow Hordberg

Buell's assurance of ...

HIGH EFFICIENCY TOW MAINTENANCE LONG LIFE

Believing that progressive plant executives and engineers will welcome detailed information pointing up the reasons for industry's growing preference for Buell (van Tongeren) Dust Recovery Systems, Buell will inaugurate a series of six explanatory advertisements descriptive of the engineering factors largely responsible for its constantly increasing installations.

Look for these enlightening dust recovery messages in leading industrial and engineering publications. They will graphically detail the advantages of the six outstanding Buell features briefed at the right.

The interesting Buell book — "The van Tongeren System of Industrial Dust Recovery"—has been especially prepared for operating executives and engineers.



BUELL ENGINEERING COMPANY, INC. Suite 5000, 2 Cedar Street, New York 5, N. Y. Sales Representatives in Principal Cities

1. The "Shave-Off"

The patented van Tongeren principle, exclusive with Buell. Utilizes the "double eddy" current, establishing a highly efficient collection force.



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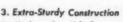
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2. Large Diameters

Permit use of extra thick metal. Afford large dust outlets, prevent clogging. Reduce abrasion.



Rolled and welded, one piece construction; hoppers braced with 3" channels to withstand vibration.





4. Correct Hopper Design

Plays a most important, often disregarded, part in dust collection efficiency. Dust disposal facility must be anticipated in the initial overall design.

5. Split-Duct Manifolding

A prime factor in efficient distribution of the dust load. Buell's manifolding method has flexibility, discharging gases from any side or end.



6. Inner Welds Ground Smooth

Proper finishing of inner welds effects operating efficiency, reduces erosion, ensures longer life.

DESIGNED TO DO A JOB, NOT JUST TO MEET A "SPEC"



HE WAR MANPOWER COMMISSION in Tits most recently announced list of essential and critical activities to be used by Selective Service as a guide in the induction of men in the 26 through 29 group has placed the rock products industries in two of the classifications, but with more limitations than in the previous listing. Section 11. Nonmetallic Mining and Processing and Quarrying includes the mining, processing or quarrying of salt, gypsum, phosphate sulphur, potash, asbestos, graphite, pyrites, borates and other salines; fluorspar, mica, talc, abrasive sands, calcite (optical), and similar essential products. Abrasive sands is taken to embrace foundry sands, glass sand, etc., according to the most recent interpretation. Section 22. Production of Stone, Clay and Glass Products includes Scientific and industrial glass products; acid-proof brick, firebrick, and other refractory products: chemical lime; abrasive wheels, stones, paper, cloth and related products: asbestos produts including steam and other packing, pipe and boiler covering; crucibles and retorts; gypsum board; mineral wool (for insulation): porcelain insulators and bushings for high voltage and radio application; vitrified china for mass feeding.

L-192 Amended—Removes Repair Parts

Executive Secretary V. P. Ahearn of the National Ready Mixed Concrete Association points out in a letter to members that as amended January 17, L-192 provides only that a special certification is required on purchase orders for repair parts for emergency repair of an internal combustion machine which is an integral part of the purchaser's equipment as defined in L-192, and which cannot be operated without such parts. With this single exception, L-192 no longer has any provision by which the industry is controlled in the procurement of repair parts.- The industry is now only governed by CMP Reg. 5 for the procurement of repair parts.

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Cement Prices

Office of Price Administration is now making field studies for the purpose of determining whether present ceiling prices for cement should be increased in the following areas: (a) Ohio, West Virginia, and Western Pennsylvania; (b) Michigan; (c) Virginia, North Carolina, South Carolina, Florida, Georgia, Alabama, Louisiana, Mississippi, and Tennessee; (d) Nebraska, Kansas, Oklahoma, Arkansas and Western Missouri; and (e) Montana, Idaho, Wyoming, Utah, Colorado and New Mexico. Executive Secretary V. P. Ahearn of the National Ready Mixed Concrete Association has advised that OPA is making field studies simultaneously in these areas to determine whether ready mixed concrete producers should be permitted to increase their ceiling prices.

Asphalt Products Increase

Sellers of asphalt and asphalt products are seeking an increase in prices from the OPA. Until a decision is reached on a petition no payments may be made in excess of the existing ceiling prices, but any increases granted may be collected later. Sellers were given this authority, effective January 1.

Phosphate Rock Prices

Amendment 1 to MPR 240, covering phosphate rock prices, has been issued by O.P.A., effective February 17. Appendix B, Maximum Prices for Tennessee Brown Phosphate Rock follows:

Unground phosphate rock:
 Size. Run of mine in carload lots—
washed, dried and unground.
 Price. Basis gross ton (2,240 lbs.) f.o.b.
cars at mines.

cars at mines. Quality. Bone phosphate of lime (B. P. L.) on a dry basis combined oxide of iron and alumina (I. & A. determined separately on a dry basis) adjusted basis 2 units B. P. L. for 1 unit I. & A. and not more than 3% moisture.

Grades: 68/66% B. P. L. 6% I. & A.—\$4.60 basis 68% B. P. L., 12½c per unit rise to 70% maximum and 15c per unit fall to 66% minimum, fractions in proportion; I. & A. basis 6% with 2 units B. P. L. for I unit I. & A., fractions in proportion, added when be-

tions in proportion, added when below or deducted when above.

70.68% B. P. L. 5½% I. & A.—\$5.10 basis 70% B. P. L., 15c per unit rise to 72% maximum and 20c per unit fall to 68% minimum, fractions in proportion; I. & A. basis 5½% with 2 units B. P. L. for 1 unit I. & A., fractions in proportions of A.

2 units B. P. L. for 1 unit I. & A., fractions in proportion, added when below or deducted when above.

72/70% B. P. L. 5½% I. & A.—\$5.60 basis 72% B. P. L. 20c per unit rise to 75% maximum and 25c per unit fall to 70% minimum, fractions in proportion; I. & A. basis 5½% with 2 units B. P. L. for 1 unit I. & A., fractions in proportion, added when below or deducted when above.

Lump rock. Add 50c per gross ton for screened lump rock of not more than 8% moisture, and with no adjustment for I. & A.

for I. & A.

Wet rock. Deduct 50c per gross ton for

wet rock not dried.

Calcining. Add \$1.00 per gross ton for Calcining. Add \$1.00 per gross ton for calcining basis 1500° Fahrenheit plus 5c per gross ton for each even 100° Fahrenheit above 1500° or less 5c per gross ton for each 100° below 1500° guaranteed.

Grinding. Add 52½c per gross ton for grinding 48 to 52% minus 200 mesh. Add 70c per gross ton for grinding 58 to 62% minus 200 mesh.

minus 200 mesh

Car door boards. Add \$2.50 per car for

boarding up car doors.

Lining cars. Add 75c per car for paper lining doors. Add \$1.75 per car for paper

lining car.

2. Finely ground phosphate rock:
Price. Basis net ton (2,000 lbs.) f.
cars at mines in carload lots in bulk
Cars at mines in carload lots in bulk

cars at mines in carload lots in bulk. Quality. Phosphorus pentoxide (P_rO_s) on a dry basis minimum grade guaranteed and not more than 3% moisture, no adjustment for excess grade or I. & A. Ground 90 to 95% minus 200 mesh or 80 to 85% minus 300 mesh.

80 to ... Grades: -\$4.75 per net ton basis 29 %

P2Os minimum. % P₂O₂—\$4.95 per net ton basis 30% P₂O₅ minimum.

31% P2O. \$5.05 per net ton basis 31% PrOs minimum

% P_2O_0 \$5.30 per net ton basis 32% P_2O_0 minimum. P2O- \$5.80 per net ton basis 33%

P₂O₅ minimum.

No charge for car liners or car door

Add 30c per net ton for bagging in valve bags which purchaser provides.

Add 30c per net ton for truck load

shipments in bulk.

snipments in bulk.

Add \$2.00 per net ton for bagging in 100-pound multi-wall paper bags.

Car bulkheads. Add \$2.00 per car for installing wooden bulkheads to separate bagged rock from unbagged rock only at buyer's request.

Gypsum Price Increase

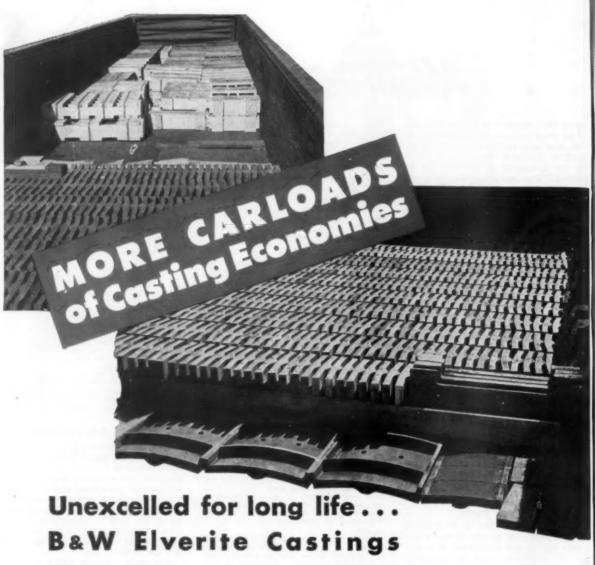
Effective February 15, producers in eight specified states may add actual transportation charges to their f.o.b. plant ceiling prices for gypsum wallboard, lath, sheathing and laminated gypsum products sold to government agencies and delivered to eastern ports for export, according to an OPA announcement. This is officially recorded as Amendment 70 to Order . A-1 under MPR 188.

The eight states to which the new amendment applies are: Indiana, Iowa, Michigan, Ohio, New York, Massachusetts, Pennsylvania and Vir-

Gypsum products for export are normally sold by plants situated in eastern metropolitan centers on a delivered price basis. This price is derived from the f.o.b. plant price at the nearest metropolitan mill plus an average trucking or shipping charge within the delivered area.

The new action is necessary to increase the quantity of the products available for export, to England and France for rehabilitation purposes. The eastern metropolitan plants, with reduced output due to the inability to obtain crude gypsum supplies in that area, are unable to meet present requirements for U.S. foreign shipments.

Inland plants have ample facilities and capacity for production to meet domestic demands for the products, in addition to supplementing supplies for export.



ELVERITE A—A chilled iron product made from cold-blast charcoal iron. The mixtures are varied to obtain a chilled section of 1/8 to 21/2 inches in depth, depending upon the shape and use of the casting. Elverite A is made with a machinable gray iron back which gives the castings strength and resistance to shock. The chilled sections have a hardness of 500-550 Brinell.

ELVERITE C—An alloyed, heat-treated, chilled iron product made from a base mixture of charcoal iron. The sections back of the chilled areas are of such hardness that they must be finished by grinding. The chilled sections have a hardness of 675-725 Brinell.

For economical operation, specify Elverite.

BABCOCK & WILCOX

The Babcock & Wilcox Co.

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Exit Conventions-Temporarily

WE HAVE JUST attended the last major convention of the rock products industries, presumably for the duration. Even for a year or two after Peace comes, the load on railway passenger equipment probably will be such that travel must be restricted. It is said the railways have less passenger equipment than at the close of 1918, and military travel will not diminish immediately but rather increase with the end of the war. In the meantime the railway equipment is wearing out and is being wrecked. Time will be required to replace it. Tracks on even the best lines are getting rough and more hazardous from lack of adequate maintenance and reconstruction.

So, while convention travel is said to constitute only about three percent of all passenger traffic, and military travel about one-third, it appears that in the opinion of government, the three percent can be dispensed with. However, it would appear to a casual traveler that the government could save far more than three percent passenger mileage by cutting down on unnecessary travel by some of its own three-and-a-half million civilian employes.

National Associations Must Have National Issues

All the national associations in the rock products industry had small beginnings. Some, as in the sand and gravel and quarry industries, were preceded by local associations. None succeeded in establishing nationwide or national associations until an obvious national issue or problem had to be met. Thirty or forty years ago there were few national problems that interested producers in such an obviously local industry-save, of course, the always present one of a universal desire to make individual enterprises more profitable. particular problem usually had to be approached by indirect methods, because anti-trust laws preceded national organizations in most industries. Very possibly this was a factor in developing the public service conception of industry.

The National Lime Manufacturers' Association, predecessor of the present National Lime Association, was apparently the first in the field. It grew out of a meeting of a few man-

ufacturers called together in 1902 by the late E. H. Defebaugh, editor and publisher of Rock Products. Anyone who will read our predecessor's editorials and speeches of that period will find that his theme, after getting groups of businessmen together, was "more profit" from their enterprises by lessening competition and raising prices. He was always frank and to the point. The early proceedings of the National Lime Manufacturers' Association contain plenty of free discussion condemning cutthroat competition and low prices.

With the Association of Portland Cement Manufacturers, founded about the same time (1902), the approach was different. A group of Eastern manufacturers met to discuss a common problem of trade practice—how to handle the cloth bag container. Another urgent common issue cropped up, that of meeting foreign competition. For, at that time. English and German portland cements had far greater repute among American engineers than the domestic product. Robert Lesley, in his "History of the Portland Cement Industry," says: "The purpose in the minds of these early workers in organizing what is now the Portland Cement Association is characteristic of the organization today: first a desire to progressively advance the science of cement making and the use of concrete, and thus render a sincere service to the users of cement that would give the product a prestige and self-impelling force, and thus enlarge and establish its reputation and its market."

That objective has been conscientiously carried out. It proves the indirect approach to profit is the more effective. As a result the cement industry has had the active coöperation, both in its research and promotional work, of many independent engineers and researchers. It has been successful in most instances in guiding such independent efforts into constructive channels, and has been tolerant of many efforts which were

not so constructive. Other associations in this and other fields owe much to the P.C.A. for demonstrating successful methods of industrial coöperation, and for proving that genuine service to society pays the coöperators dividends.

Research, Promotion and Production

The more successful other associations in our field have more or less followed the pattern of the P.C.A. so far as their means permitted. The national associations in the mineral aggregates field were originally organized to meet their first problems of national scope in 1917 and 1918. when war conditions caused stoppage of construction and denial of coal and power to building material producers. This was followed soon after by a country-wide increase in freight rates by the government-operated railroads. To meet these issues the industry needed national organization and spokesmen.

When these issues had been settled, the associations turned to research and promotion. The example of the P.C.A. was an important factor, but one equally important was the competition between crushed stone, or slag, and gravel. Fortunately, this research work came into the hands of broad-gauge engineers and research men, so that their efforts have been constructive, and the rivalry of the competitive industries has resulted in developing much valuable engineering information.

Only the Portland Cement Association has been able to do constructive research on the second objective of its organizers—to advance the science of making its product. The research done by the aggregate associations has had more to do with the correct uses of their products, than with their production and preparation. Therein lies the greatest opportunity for service by these associations in the future.

The annual conventions of the industries have been very helpful in spreading knowledge of better operating technique and practices, and we have seen a constant and gratifying growth in convention programs with this in mind. Of recent years, problems of management brought on by federal laws, rules and regulations have perhaps over-shadowed operating problems, but a new generation of owners and managers, more accustomed to being fettered by such regulations, and more interested in technical problems will again come to look upon conventions and industry meetings as opportunities to enhance their education in operating technique.

nothan C. Rockwood



Building a B-29 base in 158 days

WORKING under enemy fire, Army engineers began converting Saipan into a B-29 base on D-day plus 5. Only 158 days later, Superfortresses took off for their first Tokyo raid. Using swarms of bulldozers and shovels – part of the 9,000 tons of construction equipment brought ashore – coral for surfacing runways was quarried and delivered on a round-the-clock schedule one truckload every 40 seconds!

Whether used on the fighting fronts or the home front, efficient, trouble-free performance of construction equipment depends on effective lubrication. That is why experienced contractors everywhere use Texaco.

Texaco Marjak, for example, used in your tractors, shovels, bulldozers, trucks, etc., provides ideal film lubrication inside a bearing, yet maintains its original consistency at the outer edges . . . sealing itself in, sealing out sand, dirt, water. Its tough adhesive film cushions bearings against road shocks. Makes parts last longer.

For wheel bearings, use Texaco Marfak Heavy Duty. It stays in the bearings – off the brakes. Seasonal repacking is no longer required.

Texaco lubricants have proved so effective in service they are definitely preferred in many fields, a few of which are listed at the right.

Texaco Lubrication Engineering Service is available to you through more than 2300 Texaco distributing points in the 48 States. The Texas Company, 135 East 42nd Street, New York 17, N. Y.

THEY PREFER TEXACO

★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.

* More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.

* More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

★ More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.

More revenue airline miles in the U. S. are flown with Texaco than with any other brand.



TEXACO Lubricants and Fuels

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News

ABOUT THE INDUSTRY AND PEOPLE

Heads Talc Co.

JOSEPH T. SMITH, vice-president and general manager of the Eastern Magnesia Talc Co., Inc., Burlington, Vt., has been elected president of the company, succeeding the late John S. Patrick. Other officers elected were: Eugene W. Magnus, vice-president and general manager; Roy L. Patrick, treasurer; Robert F. Patrick, assistant treasurer, and John H. Patrick, clerk. Three new directors were elected: Dr. Lyman Allen, Gordon C. Morse (now serving in the navy), and W. R. Reilly. Re-elected directors are Joseph T. Smith, Roy L. Patrick, Eugene W. Magnus, John H. Patrick and Elias Lyman, Jr.

Consulting Engineer

JOE H. DIXEY, until recently vicepresident of the Transit Mix Concrete Co., New York City, is now a consulting engineer specializing in the design and operation of readymixed concrete plants and equipment, with offices at 70 E. 45th St., New York 17, N. Y. As an operator of ready-mixed and transit-mixed concrete plants, Mr. Dixey has had experience on large industrial and government projects in many parts of the United States. He is a pastpresident of the National Ready Mixed Concrete Association.

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WALTER T. JOHNSON, acting district sales manager of the Columbia Chemical Division of the Pittsburgh Plate Glass Co., Chicago, Ill., has been made district sales manager for the division in Chicago, Mr. Johnson has been with the Columbia organization since 1930.

Cement Executive Retires

JOHN ANDREW MILLER, president of the Pennsylvania-Dixie Cement Corp... New York, N. Y., has retired as president of the company, after an association of 45 years. Mr. Miller began his business career in 1895 as a general contractor on several important railroad projects serving the lime-stone and slate regions of eastern Pennsylvania. He was in close touch with the manufacture of portland cement and assisted in the construction of mill properties in the district. Early in 1900 he joined the Dexter Portland Cement Co., Nazareth, Penn., and soon became executive vice-president of the company, holding that position until 1910 when he was elected president. About a year previous, Mr. Miller constructed the Clinchfield Portland Cement Co. plant and was made president of the company upon its completion. In 1926, a merger of the Clinchfield and Dexter interests with other prominent cement companies, formed the Pennsylvania-Dixie Cement Corp. of which Mr. Miller was appointed president. In 1928 Mr. Miller was elected chairman of the board of directors. After serving eight years in this capacity, he resumed the presidency and has remained in that position until the present time. He



John A. Miller

was born in Baltimore, Md., in 1872 and obtained his education at Blair Academy, the Lawrenceville School and Lafayette College. Mr. Miller will retire to his farm at Nazareth, Penn.

Succeeds President

Barton W. Druckenmiller, vicepresident and general sales manager of the Pennsylvania-Dixie Cement Corp., New York, N. Y., has been elected a director and president of the company. He succeeds John A. Miller who resigned recently after 45 years in the cement business. Mr. Druckenmiller started his career in the industry in 1913 and has been with Penn-Dixie during ten of the intervening 32 years.

W.P.B. Director

WARREN SPENCER has been appointed director of the Building Materials Division of the War Production Board, to succeed John L. Haynes, who was recently named director of the Construction Bureau. Mr. Spencer is a native of Washington, D. C., and has been engaged in the contracting business since 1925. He joined the Building Materials Division of the W.P.B. in December, 1942, having suspended operations of his company for the duration of the

war. In the last year, Mr. Spencer has served as assistant director of the division and, recently, as acting director.

Joins Sand Company

Dr. Ellis Jensen of Wauwatosa, Wis., has joined the Janesville Sand and Gravel Company, Janesville, Wis., of which his father, J. K. Jensen, is president. For the past three years Dr. Jensen was associated with Allis-Chalmers Mfg. Co. in the policy forming department of the labor division. He is a graduate of St. Olaf College, Northfield, and was ordained to the ministry in 1933. Dr. Jensen took his Ph.D. degree at the University of Chicago and studied in Germany.

Leaves Block Co.

JAY C. EHLE, former manager of the light weight concrete division of the Cleveland Builders Supply Co., Cleveland, Ohio, has joined the staff of Stearns Manufacturing Co., Inc., and will make his headquarters at Adrian, Mich. Mr. Ehle's recent activities as chairman of the curing committee of the National Concrete Masonry Association in determining improved curing methods for concrete products have been helpful to the entire industry.

Sons in Service

W. K. SMILEY of W. K. Smiley & Sons, Lynchburg, Va., with plant at Madison Heights, has two sons in service who were formerly associated with him in business. The company produces sand and gravel and manufactures concrete products. J. M. Smiley, stationed in the Aleutian Islands, has been in the service 2½ years, and H. M. Smiley, with a bomber squadron in France, has seen 3½ years of service.

Dust Control Studies

SIDNEY J. ROBISON, who recently retired from his position of chief engineer of the Universal Atlas Cement Company, Hudson, N. Y., has joined the staff of the Western Precipitation Corporation, and will make his headquarters in Chicago, Ill. Mr. Robison will devote his time to special problems relating to the adaptation of Cottrell electrical precipita-tors and multiclones. Mr. Robison's industrial experience dates back to 1903. His first work was in the chemical industry. He joined the United States Steel Corp. in 1906 and in 1907 was transferred to the newly formed Universal Portland Cement Co., now the Universal Atlas Cement Company, in the engineering department at Buffington, Ind.

Forms Partnership

HAL G. Sours, formerly director of the Ohio State Highway Department, has formed a partnership with EUGENE E. BALDWIN, formerly of Taylor & Baldwin, Columbus, Ohio. The company will be known as Baldwin & Sours and will be engaged in the handling of highway materials and equipment, including asphalt, road oil and chemicals for ice control, bituminous distributors and accessories, street sweepers, and salt and stone spreaders.

Resigns

CHESTER A. FULTON, president of the Southern Phosphate Corp., Baltimore, Md., has resigned after serving 17 years as chief executive of the company. Mr. Fulton is a past president of the Phosphate Rock Institute and of the American Institute of Mining and Metallurgical Engineers.

Retires

CHARLES J. BRAND, executive secretary and treasurer of the National Fertilizer Association for almost 20 years, has retired, as he has reached the retirement age under the retirement plan for the Association.

Elected President

FRED N. KETTENRING, president of the Graystone Concrete Products Co., Seattle, Wash., has been elected president of the Seattle Construction Council, succeeding W. C. Hutchins.

Goes to Washington

W. L. Fuller, formerly with the National Concrete Masonry Association, Chicago, Ill., is now a member of the staff of Besser Manufacturing Co., with headquarters in Washington, D. C.

Heads Laboratories

J. T. Jarman, formerly chief metallurgist and chemist of the Allis-Chalmers Mfg. Co., Milwaukee, Wis., has been appointed general superintendent in charge of the reorganized metallurgical and chemical laboratories.

Made Associate Professor

L. K. Herndon, secretary of Committee C-7 on Lime, American Society for Testing Materials, has been made associate professor of chemical engineering of The Ohio State University, Columbus, Ohio. Mr. Herndon formerly was assistant professor.

C.S.I. Director

HERMAN FRAUENFELDER has been appointed managing director of the Cast Stone Institute, New Haven, Conn. Mr. Frauenfelder succeeds C. G. (Gil) Walker who is now associ-

ated with the Edmonds Art Stone Co., Washington, D. C.

Texas Fluorspar Development

J. E. INGRAM, San Antonio, Texas is the owner and operator of a fluorspar mine and processing plant in the Eagle Mountains near Hot Wells, Texas on the Southern Pacific Railroad. Philip Hoyt is consultant geologist. This area, which was opened up after core drilling operations had been conducted under the direction of A. B. Needham of the Bureau of Mines, has excellent productive possibilities. The mine, which is in Hudspeth county, has been in experimental operation for a year, producing about 40 tons a day. The fluorspar, with numerous outcroppings at the surface, has been explored to a depth of 200 ft, using shafts and drifts. Some of the mineral proves more than 90 percent, but the largest quantity is mill grade, around 40 and 50 percent. Jigs and flotation are used in the mill.

Diesel Engine Meeting

DEPARTMENTAL HEADS of prominent mid-west engineering schools were guests of Nordberg Manufacturing Co., Milwaukee, Wis., on January 19. This was the first of several meetings inspired by the Diesel Engine Manufacturers Association as part of the educational program of that organization. The meetings will be held in the Diesel engine manufacturing plants. The purpose of the meeting and the program covers the following points: 1. To acquaint heads of engineering schools with the facilities of each Diesel engine manufacturer: 2. To note the recent progress made by the Diesel engine in meeting wartime needs; 3. To learn of postwar plans and developments; and 4. To obtain a better understanding of the needs of the Diesel engine manufacturer for competent engineering graduates to work on the design, testing, and development of Diesel engines. 15

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Gravel Plant Modernization

FLINT CRUSHED GGAVEL Co., Tama. Iowa, is installing a triple-deck screen, a new dredge ladder, scrubbers, and a new scale. Another shovel will be purchased, and the crushing department will be enlarged to take care of increased production. Last winter the plant was dismantled and moved three-quarters of a mile to the southwest edge of the company's lake deposit to move the plant closer to pumping operations. Other equipment purchases also are contemplated.

Start Agstone Concern

CARR ROCK PRODUCTS CO., Neodesha, Kans., has been organized and plans are being made to start operations in March or April. The crushing plant will be located on the site of the former cement mill northwest of the city. Agricultural limestone and crushed rock for road construction will be produced. Mr. Carr. the owner, is a former A.A. field man for the eastern half of Kansas.

Phosphate Plant Expansion

International Minerals & Chemicals Corporation, Chicago, Ill., has announced through R. P. Resch, vice-president and treasurer that the company has selected a site for one of two proposed new fertilizer plants to be constructed in the mid-west when materials become available. A second addition to the Chicago Heights, Ill., fertilizer plant, nearing completion and built at a cost of \$125,000, will be in operation March



Manufacturers attending educational meeting. First row, left to right: J. E. De Long, president. Waukesha Motors Co.; R. W. Bayerlein, sales manager, Nordberg Manufacturing Co.; Henry Barbour, public relations manager, Fairtanks-Morse & Co.; second row, R. W. Kahlenberg, vice-president, Kahlenberg Bros. Co.; E. L. Horst, sales department, Murphy Diesel Co.; Paul Eels, Le Roi Co.; Harold Hill, vice-president, Lister-Blackstone, Inc., and Robert E. Friend, president, Nordberg Manufacturing Co.

15 and will expand the output of agricultural superphosphate 25 to 30 percent.

Letter to the Editor: Heater for Shovel

SIR: As a subscriber to Rock Products we have been very much interested in experiences of other gravel plant operators in working out more efficient operations, etc., and we were wondering if you knew of anyone that had worked out any good solutions to the problems of starting gasoline operated shovels, cranes and loaders during the cold winter months. The temperatures here range from 20 below to 30 or 40 above during the winter and we have quite a problem in this respect.

We have electric power available which we have to pay for but don't use in the winter months, because our plant is not operating, that we could use, but we would not necessarily restrict ourselves to that. Any kind of a heater that could be used to warm up the engine would inter-

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Very truly yours, C. G. Evans, General Manager, Duluth Builders Supply Co., Duluth, Minn.

Tennessee Phosphate

AT least two-thirds of the Tennessee production of ground phosphate rock for direct application goes to Illinois alone; Indiana, Ohio, Kentucky, and Oklahoma get 27 percent. leaving only about 6 percent to be divided among 15 or 20 other states. Under the present demand there are several states like Oklahoma which would now take the entire Tennessee production if it could be had. AAA is reported as selling Florida 32 percent rock delivered at \$14.80, with freight rates varying from \$6.34 to \$10.40 a ton, and the Florida miners ceiling of \$6.00. With commercial dealers ceiling at \$11.25 f.o.b. mines, the delivered price through dealers runs from \$17.59 to \$21.65, yet consumers are apparently taking all they can get at either price level.

Merge Stone Companies

FRONTIER STONE PRODUCTS, INC., Lockport, N. Y., is the name under which Pekin Stone Products Corporation and Frontier Bituminous Materials Corporation will operate since the companies have combined. President M. J. Wurtenberger has announced that there will be no change in the officers or personnel.

Asbestos Project

RAY SYLVESTEE, Dunsmuir, Calif., has extensive asbestos mining claims in Siskiyou and Shasta counties. Russell R. Trengrave, engineer for the United States Bureau of Mines recently completed an examination

of the claims, and core drilling tests have been recommended to qualify claims for an RFC loan. Both crysotile and amphibole asbestos have been found on these claims.

Mica Purchasing Plan

COLONIAL MICA CORPORATION, New York, N. Y., has announced that for the period April 1 to June 30, it will purchase ruby muscovite mica, full trimmed, of qualities and sizes comparable to those purchased in foreign countries for comparable qualities and sizes, plus duty, plus a due allowance to cover estimated cost of transportation and other charges incident to landing this mica in the United States. Specific prices will be announced before expiration of the first quarter. Domestic punch mica now being purchased under first quarter 1945 schedule will not be purchased during the period April 1 to June 30.

To Install Agstone Plant

HAYES CONSTRUCTION Co. will install an agricultural limestone crushing plant near Junction City, Kans., about April 1. According to W. O. Homer, local manager of the firm, the plant will be erected on a 50-acre site purchased from Glen Kirkpatrick. The plant will have a capacity of about 400 tons of agricultural limestone per day and also nearly 200 tons of larger sized crushed rock. This company has three other crushed stone plants, one in Miami county at Paola, Kans., and two in Missouri.

Flotation Plant

OPERATIONS at the fluorspar mine near Walden, Wyo., have been closed down due to weather and lack of miners. The mill will be shut down for two or three months, depending on the weather. The company is planning to put in a flotation plant to produce acid fluorspar.

Contracts Awarded

M. C. Lenninger & Sons has received a contract from the Oregon State Highway Commission, known as the Eigin rock production project, which calls for approximately 11,000 cu. yd. of crushed rock at a cost of \$31,800.

W. F. BRINKLEY of Granite Quarry, Salisbury, N. C., was awarded the contract to supply Rowan County farmers with agricultural limestone. Under the A.A.A. soil building allowance, the farmers pay 80c per ton at the time of ordering. The remaining \$2.60 per ton of the cost is deducted from his allowance at the close of the year. Additional limestone may be obtained direct from the quarry at a price of \$3.60 per ton.



U. S. Navy Official Photo

Naval Medical Center depicted on front cover of this issue is a fine example of reinforced concrete construction trimmed with cast stone concrete

GLACIER SAND & GRAVEL Co., Seattle, Wash., was low bidder for ready mixed concrete to be furnished to the Bonneville power administration at Covington. The amount involved was \$2035.

MILLARD TRIPP, Dexter, Mo., has received the contract to furnish agricultural limestone to farmers of Stoddard County under A.A. contracts. The price is \$2.75 a ton.

Cement Production Annual Summary

BUREAU OF MINES reports that production of finished portland cement during 1944 totaled 90,840,000 bbl. or 32 percent below production in 1943. Mill shipments of 94,234,000 bbl. were 26 percent below the 1943 volumes. The monthly rate of decline was greatest in the first quarter, 47 percent below the volume reported in the same quarter of 1943. The December output of 7,387,000 bbl. was 11 percent, and shipments of 4,595,-000 bbl. were 18 percent below corresponding data of the same month in 1943. Stocks of finished cement were in a favorable condition at the beginning of 1944 and reached a peak in March, after which they followed essentially the same seasonal trend as that of the preceding year. to a year end total of 19,785,000 bbl.

The following statement gives the relation of production to capacity, and is compared with the estimated capacity at the close of December, 1944, and of December, 1943:

RATIO (PERCENT) OF PRODUCTION TO CAPACITY



Support Red Cross Drive

EVERYONE in this great land of ours should respond generously to the American Red Cross appeal for funds to support its activities on farflung battle fronts. Starting March 1, the Red Cross will ask for your gift to help save the lives of our fighting men and bring some measure of comfort to those who are hospitalized or battle-weary.

Even after the last gun has been fired many a month will pass before all our fighting men are home. Some will be confined in hospitals for long periods of recovery. Traditional Red Cross service for these men who have sacrificed so much must continue unabated.

Form Agstone Association

NATIONAL AGRICULTURAL LIMESTONE ASSOCIATION, INC., New York City, has been organized through the efforts of Joseph Mills of that city. The stated purposes of the new organization are, in brief, as follows:

To protect, promote, foster and advance the progress of the agricultural limestone industry; to encourage and conduct scientific research into all phases of the industry; to encourage and extend scientific research which will assist in extending markets for the industry; to procure and disseminate useful knowledge pertaining to scientific developments of agriculture; to work toward the extension of periods of production of agricultural limestone and reduce cycles of seasonal demand; to encourage medical research related to the contributions made by agricultural limestone (in nutrition, health, etc.); to promote relations between the industry and its members and the manufacturers of machinery and supplies; to cooperate with State and regional agricultural trade associations in matters of mutual interest; to protect the industry against unfair and unjust burdens and exactions: to inform its members and promote their joint interests in connection with federal, state and local legislation and regulations; and to publish and distribute bulletins concerning legislation, agricultural and other scientific research pertinent to the industry.

Headquarters are at 50 Broadway, New York, N. Y. Joseph Mills is president, Clarence A. Munz is executive vice-president, D. U. Smith is treasurer, and E. R. Scheuner is secretary. The directors, besides the officers, are Paul Brown, Springfield, Tenn.; W. L. Bryan, Redwing, Minn.; W. H. Cox, Jr., Nashville, Tenn.; J. M. Deely, Lee, Mass.; N. K. Dickerson, Jr., Monroe, N. C.; K. B. Dusenbury, Malvern, Kans.; C. A. Lang-ford, Gallatin, Tenn.; E. Lanning, Marion, Iowa; Ed. J. Leary, River Falls, Wis.; H. T. Long, Shreveport, La.; G. W. Mintz, Buffalo, N. Y.; N. Neuheisel, Eau Claire, Wis.: R. J. Pleasant, Tulsa, Okla.; E. M. Prettyman, Hershey, Penn.; Davis Rich II, Swanton, Vt.; E. T. Spidle, Montgomery, Ala.; R. T. Willingham, Atlanta, Ga.

Chemist Corner Correction

ON PAGE 236 of the January issue of Rock Products, several errors occurred in Chart 2. On the graph for determining the percent C₂A, the scale for percent Al₂O₃ should read, from top to bottom, 6, 5, 4 rather than 2, 3, 4. The uppermost graduation was purposely not shown. The left section of the base scale should be titled C₂S and should be graduated, from left to right, 10, 20, 30, 40 rather than 50, 40, 30, and 20. The new Chart 2, shown herewith, is correct, and should be used in making

calculations. On page 194 of the same article, the clinker analysis value for the percent SiO_2 should read 23.3 rather than 22.3.

Sand-Lime Brick Production and Shipments

Four active sand-lime block and brick plants reported for January, 1945, and four for December, 1944, statistics for which were published in February, 1945.

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AVERAGE PRICE FOR JANUARY

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		Plar		Delivered Price	
Detroit, Mic	ch			\$19.75	
Saginaw, M Grand Rap Seattle, Wa	ids, Mich			16.20 21.50	
seattle, wa	1011	10.	30	21.00	

STATISTICS FOR DECEMBER AND JANUARY

	*December **Januar										
Production		969,031	976,200								
Shipments (rail)		173,000	355,000								
Shipments (truck)		752,031	541,995								
Stocks on Hand		143,000	241,000								
Unfilled Orders		220,000	390,000								

*Four plants reporting: Incomplete, one not reporting stocks on hand and two not reporting unfilled orders.

**Four plants reporting: Incomplete, one not reporting stocks on hand and one not reporting unfilled orders.

Pavement Yardage

Awards of concrete pavement for January, 1945, have been announced by the Portland Cement Association as follows:

SQUARE YARDS AWARDED DURING

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Streets															
Roads			-	_	7		-	-		-	*	-			342,280

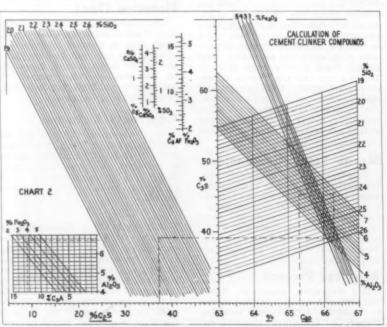


Chart 2 (corrected) is used for making a rapid estimation of the compound composition of portland cement or cement clinker

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Refractory Linings for Rotary Cement Kilns

Part 2: Installation procedure for lining rotary kilns

N PREPARING the following outline, it is realized that no hard and fast rules can be established for the installation of rotary kiln linings, since there are many factors to be considered, and numerous variations from one plant to another. Keeping in mind the essential requirements: namely, that the lining rest firmly against the shell at all points, and that it be of tight construction, the method followed to secure such construction may deviate somewhat from the method herein given, but deviations should not be permitted without assurance that the construction will not suffer.

Materials Required

It is recommended that the rotary kiln lining be installed by using jacks and that one jack be used for every two lineal feet of lining.

The condition of the kiln shell and the position of the longitudinal but straps should be carefully observed before starting to lay the lining. The jacks should never be placed directly over longitudinal butt straps, nor should they be placed over or under warped areas in the kiln shell. It is not possible to avoid jacking over circumferencial butt traps and the

"From a paper presented by Mr. Rochow of Harbison-Walker Refractories Co., pefore the Portland Cement Association. By W. F. ROCHOW*

rotary kiln blocks, that come under the timbers, should be notched out for the rivets in order that they will rest directly against the shell. This will provide a smooth surface on the inner face of the lining, against which the timbers will rest, and make it possible to securely jack the lining.

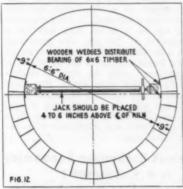


Fig. 12: Method of jacking in retary kiln

In the case of widely spaced rivets on which a single block would rest, it is necessary to cut the block to fit over the rivet and against the shell.

In the balance of the lining, where the rivets do not come under the jacks, a filling material consisting of a mixture of 50 percent ground fire brick and 50 percent portland cement can be used over the rivets. Nevertheless, when filling material is used it is important that the blocks be firmly seated against the rivet heads.

Installation Procedure

The installation of the lining is started at the discharge end, the blocks being laid dry and directly against the shell. The majority of operators have found it more satisfactory to lay the blocks in accordance with the "ring" construction and it has been found advantageous to break the joints in each succeeding ring. Sections of about 8 ft. to 10 ft. in length can be installed conveniently with each setting of the jacks.

Each course is started at the lowest point in the kiln shell and is built up equally at both sides, until slightly above the centers.

Fig. 12 shows the lining with a jack in place, set in approximately a horizontal position with its axis about 6 in. above the axis of the kiln. Strong straight timbers of approximately 6 x 6 in. in section are placed between the jack ends and the lining. It is important that the blocks, in each course, extend slightly above the timbers. The jacks are tightened in place and wooden wedges are driven between the timbers and the lining along the entire length of the timber, both from above and from below, at intervals of approximately 3 to 4 in. After the jacks are in place the kiln is rotated about 30 deg. and the bricklaying can proceed. Usually two or three such stages are sufficient to bring the keying point within easy reach. It is always advisable to test the jacks for tightness, after the kiln has been rotated, and it may be found the jacks can be tightened slightly.

During the keying operation it is important to cut and rub the keys carefully so as to obtain a very close tight fit. In cutting the keys no block should be cut to the extent that its chord dimensions are less than two-thirds of those of a full size block. If more than this amount of cutting is necessary, it is preferable to cut a small amount from two blocks, which are used for the keys. This method is recommended so that the keys will be approximately equal in mechanical strength to the blocks in the balance of the lining.

In some cases it may be necessary
(Continued on page 126)

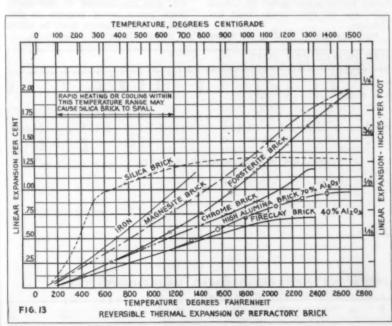


Fig. 13: Reversible thermal expansion of refractory brick

HINTS and HELPS

Practical Ideas Developed by Operating Men

Placing Concrete Pipe

THE W. A. BARNHART CONSTRUCTION Co., Salem, S. Dak., manufactures and installs a large number of reinforced concrete culvert pipe for high-



Showing method of placing reinforced concrete culvert pipe after flood waters had ripped out the old style bridge

way drainage. The pipe, which are sold under the trade-mark of Granatoid, range in size from 12 in. I.D. to 72 in. I.D., and in shell thickness from 2 in. to 7 in.

In the illustration may be seen the crane mounted on a truck chassis which is used to install the culvert pipe. When the government took

over the company's crane, the rig shown in the illustration was made from a Ford truck chassis with power take-off to a Jaeger hoist from a No. 10 tilt type mixer. Pipe are supported from the crane hook by a heavy steel yoke, one leg of which is thrust inside the pipe shell. The crane hook is fastened to the other leg of the yoke so that the pipe is balanced to prevent it from slipping off in placing the pipe. The rig is also used in loading pipe on trucks.

Another product made by this company is a reinforced concrete portable stock tank. It has a diameter of 8½ ft., is 30 in. high, and has a capacity of 750 gal. The tank wall is 3 in. thick at the top, tapering on the inside to 5 in. at the base, and is reinforced with two lines of electrically welded steel mesh. The floor slab is 2½ in. to 3 in. thick, reinforced with steel mesh, and is supported by two concrete beams 5- x 6-in., which are reinforced with ½-in. steel rods.

Heat Exchanger Economies By W. F. SCHAPHORST

In too many plants the heat exchanger is a device the value of which is not fully appreciated. However, the value of this equipment can be quickly determined by the use of the chart shown herewith. Simply lay a straightedge across the chart and column. B immediately gives the boiler horse power saved by almost any type of high grade heat exchanger.

For example, if 2000 lb. of water

are used per hour for some purpose, and if that water requires heating, and if heat now allowed to go to waste will increase the temperature of that water 150 deg. F., how many boiler horse power will the heat exchanger save?

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Connect the 2000, column A, with the 150 column C, and column B shows the saving to be 9 boiler horse power, as indicated by the dotted line drawn across the chart.

In other words, the heat exchanger virtually gives 9 boiler horse power for nothing. It utilizes the heat that would otherwise go to waste. Or, if you have a 60-hp. boiler in your plant and a heat exchanger is added, you can then get 69 hp. out of the same boiler without more fuel.

The range of the chart, it will be noted, is great enough to handle the conditions in most plants. A 600 hp. saving is the maximum, but by adding or subtracting ciphers from the figures in column A the chart can be applied to any condition. Thus, for example, if the quantity of water is 20 lb. per hour instead of 2000 the same dotted line can be used and the answer in column B will be 0.09 boiler horse power instead of 9 hp. That is, when you deduct ciphers from column A you move the decimal point as many places to the left as the number of ciphers deducted. On the other hand if there are 200,000 lb. of water per hour the same dotted line will give the answer as 900 boiler horse power saved because in this case as many ciphers must be added to column B as are added to A.

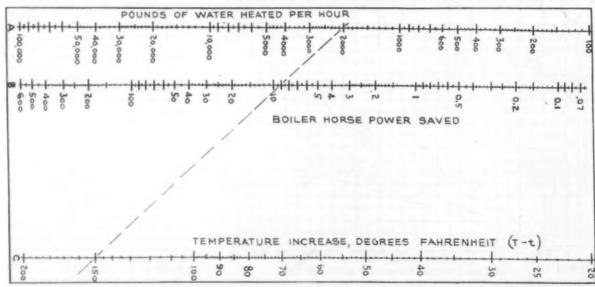


Chart which shows how much boiler horsepower may be saved for a given rated boiler when a heat exchanger is added

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IN THE ACCOMPANYING ILLUSTRATION is shown a soft stone eliminator. patented by Marvin C. Stevens, Oxford, Mich., which operates on a new principle. Most devices developed in the past have worked on the idea of removing the soft stone from the aggregate, but this machine reverses the procedure by removing the hard stone from the aggregate. The principle of separation used in this machine may be determined in a simple manner by taking a few hard pieces of stone and dropping them, say 9 ft., upon the ball of a railroad rail and noting how they will rebound. Try the same procedure with several soft stones, and note how the stone fails to rebound.

The soft stone eliminator described, herewith, is designed with chutes of narrow dimensions through which to drop the aggregates in a comparatively thin stream onto a steel striker plate placed on approximately a 30-deg. angle, the purpose of the angle being to divert the rebound of the stone quickly out of the way of oncoming stone. Even with such an angle, some stones may bound sidewise instead of forward, and therefore a narrow chute is employed. The sides of the chute are extended so that the stones, if they take a sidewise bound, will strike the chute sides and be guided forward in their movement. Within the extended sides, or fins, is placed a barrier guard of steel which is movable vertically and horizontally through a crank arrangement. By regulating the height and distance of this barrier board with reference to the heavy striker plate, it is possible to bar any soft stone going over it.

Certain irregular shaped hard pieces of stone will hit the rebounding striker plate in such a manner that they will not rebound sufficiently and therefore four treatments are recommended. Also, if the feed is too fast, thereby setting up some interference of rebounding stone with the incoming feed, material which would ordinarly be removed by the first process will not be so removed. However, if only 50 percent of the good stone is removed on the first processing, there will be only one-half the feed for the second process, and for each subsequent process, the feed will decrease. The irregular stones which do not rebound on the first treatment, will not hit the striker plate in the same manner, and will bound out on the second, third or fourth trial.

In operating the machine, the aggregate is first separated in sizes, $\frac{1}{2}$ to 1 in., or 1 to 2 in., so that the materials passing the screen can be spread out to a bank of chutes totaling the screen's width. A steady feed is important.

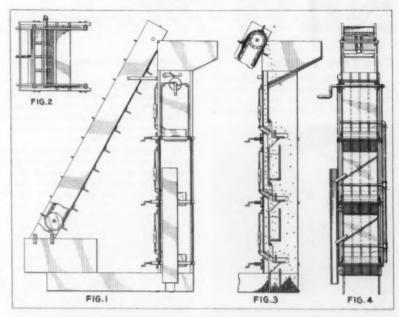


Fig. 1: Side elevation of soft stone eliminator, showing belt with elevator strips to raise aggregate to top for passage through machine. Fig. 2, looking down into eliminator at top. Fig. 3 shows how gravel drops to striker plates at three different levels, the good hard stone bouncing over barrier and dropping to a bin below while dust is screened out and goes into second bin, and soft stone drops to third bin. Note cranks to adjust striker plate and barriers. Fig 4 is a vertical sectional view

Another way to achieve volume capacity is to deliver the aggregate to a platform or deck. The material cones up on this deck, and the feeder rollers, driven by mitre gears, roll the stones off the deck into four banks of chutes. Thus, a deck which is 5 ft. square, will afford a feed of approximately 20 ft. in length.

As shown in the illustration, the elevator is of sufficient height to permit of four treatments, one below the other. Where there is not sufficient headroom, fewer steps of treatment may be provided with more machines arranged to take aggregates from one to the other by means of elevators.

To keep the striker plates clean, spray pipes are arranged to remove any dust accumulation. This is particularly desirable where there may be a considerable quantity of clay. Referring to the cross section illustrations of the machine, it will be noticed that there are three receiving compartments at the bottom of the machine; one to the right is for the hard stone bounding from the striker plates over the barriers; the center compartment receives the dust from the screen sections; and the third compartment is for the clay and soft stone.

Keeping Rotary Screens Clean with Brooms

TO KEEP ROTARY SCREENS free from clogging, the Fort Worth Sand and Gravel Co., Fort Worth, Texas, has

placed ordinary street cleaning brooms to work.

While this use of brooms is not new, the arrangement used by this company is novel. The brooms are fastened to circular rollers, 12 brooms to a roller, which are held in place by shafts and wooden frames. Three such rollers are used at this plant. The wooden frames are held in place so that the wire brushes just touch and do not place their entire weight on the screens. This reduces the wear that the brushes would otherwise receive. The average life of the brooms, which have wire 8 in. long, is about 1½ years.





Above: Close-up of screen-cleaning brushes.
Below: Showing how brushes are installed

NEW Machinery

Two-Tone Welding

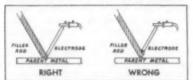
THE RESISTO-LOY Co., Grand Rapids, Mich., has developed a new system of hard-surfacing welding which is said to cut welding time almost in



Welding on a curved surface with filler rod

half. The Two-Tone system, as it is called, is said to be particularly effective in hard-surfacing and building up worn tractor treads, but it also has been used extensively in repairing cement mill equipment and all types of quarry machinery.

This technique of hard surfacing consists of welding in the conventional manner with a ¼-in. E-6010



Illustrating right and wrong method of welding with "two-tone" system

(mild steel reverse-polarity type electrode) in the electrode holder, while holding one end of a %in. bare alloy auxiliary filler rod adjacent to the arc, as shown in the illustration. Equal quantities of the electrode and filler rod are consumed. It has been determined that 30 percent more amperage than is normally used on the E-6010 electrode is required for this welding system. The excess amperage melts down the auxiliary filler rod

If the auxiliary rod were not held in the arc area, this excess amperage would produce a large molten pool of metal on the part being surfaced, but when the auxiliary rod is moved along in unison with the overcharged electrode, the excess amperage merely melts down the alloy cast filler rod, while the electrode itself is being consumed 30 percent to 50 percent faster than the normal rate. It is claimed that since welding progresses more rapidly, the parent metal is not

subjected to abnormal heating or warping.

The electrode and the filler rod mix together thoroughly, giving a high carbon, low alloy steel deposit, which resembles low alloy tool steel in grain structure, hardness, toughness, and wear resistance.

In welding by this method, the operator holds the filler rod, which carries no current, in front of the arc in the direction of travel. The arc is not directed on the filler bar. but is pointed on the work in the usual manner. The electrode is tilted backward from the direction of travel instead of forward, thus permitting a small portion of the arc to bite into the filler rod and melt it down. Best results are obtained by holding an average length arc (28-32 volts). The arc is started by welding without the filler rod in the arc area for approximately two seconds to acquire a molden pool before feeding in the

Automatic Block Machine

Jackson & Church Co., Saginaw, Mich., has designed a fully automatic high production block machine which will be available as soon as wartime restrictions are removed. A few machines will be placed in operation for observation under commercial production conditions.

As shown in the illustration, this machine uses a rotary frame in which four molds are suspended, employing vibration to fill the mold box solidly and to obtain an initial densification of the concrete in the mold supplementing the vibration with a powerful, positive hydraulic pressure. The rotary table with four pockets has a low table speed, but it has high production as the separation of the

molds in different sections of the table permits four different operations to occur at one and the same period. Power for turning the table is only a fraction of a horsepower. on on ing

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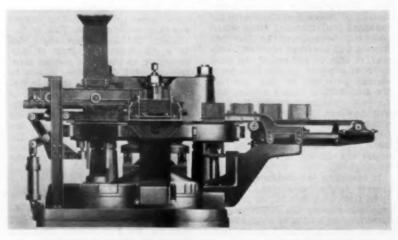
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The operation is continuous, automatic and electrically timed and controlled; it will continue to make block until stopped. It is claimed that no operator is needed.

A new feed principle is used. A feeding hopper of ample size is mounted over the table at the point where the mold is to be filled. This hopper gives a static column of concrete which is vibrated down into the mold. A limited vibration is employed, differing from the mold vibration, so that the concrete in the hopper is not packed hard. When the mold is filled and settled by magnetic vibration, a "cut-off" slices through this column at the top level of the mold and provides a bottom for the hopper. In this way there is no surplus to take care of. Concrete in the mold is left higher than the finish-height of the block, allowing compression to force the concrete down to required finish-height. The compressing travel can be varied for different materials. A fixed stop limits the ram travel so that the blocks are of the same required height.

A simple type of cored pallet is used. It is possible that pallets already on hand may be used subject to factory check and inspection. Pallets are fed automatically into the machine from a magazine. The car or rack man returning empties to the machine room will keep the pallet magazine filled.

Block are delivered automatically from the machine to a conveyor. The block are stripped upward from the machine above the level of the rotary table. In this position they can be



Variable speed, automatic block machine can produce up to 10 blocks per minute

mechanically picked up and placed on car or rack, or an automatic loading system.

Improved Mineral Wool Cupolas

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WHITING CORPORATION, Harvey, Ill., has developed improved equipment for the production of mineral wool. This equipment has been developed in cooperation with several mineral wool producers to achieve more efficient operation and a better product. Prior to the development of this equipment, the Whiting Corporation made an exhaustive study of the industry and the methods of manufacture.

This improved equipment for the manufacture of mineral wool includes: mechanical charging, with effective material distribution; water-jacketed cupola, with or without upper tuyeres for utilization of waste CO gas; air heater utilizing waste gases; steam boiler utilizing waste gases; water cooler and air heater; fly dust and wool collectors; adjustable blowing nozzles; adjust-

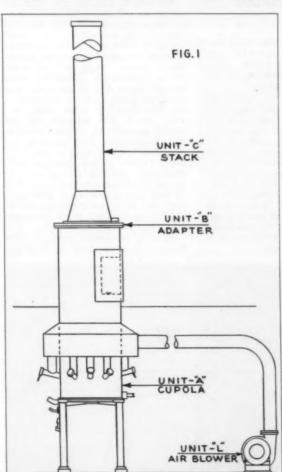
able stream dividers; auxiliary combustion equipment, oil, gas or pulverized coal control.

Equipment listed above has been designed for assembly in nine dif-ferent arrangements. Two of these arrangements are illustrated, herewith; Fig. 1 is arrangement No. 1, and Fig. 2 is arrangement No. 8. Arrangement No. 1 is a comparatively simple set-up of cupola, stack and air blower. Arrangement No. 2 includes cupola with upper tuyeres, waste gas, air-heater, stack and air blower. Arrangement No. 3 has cupola with upper tuyeres, waste gas, waste heat boiler, stack and air blower. Arrangement No. 4 has mechanical charger, cupola, by-pass with stack and air blower. Arrangement No. 5 also has a mechanical charger, cupola with upper tuyeres, by-pass to air heater, stack and air blower. Arrangement No. 6 is equipped similarly to Nos. 4, 5 and 7, but with by-pass to boiler, stack and air blower. Arrangement No. 8, Fig. 2, is equipped with mechanical charger, cupola with upper tuyeres, by-pass to gas, oil or

pulverized coal, auxiliary heat bypass duct, stack and air blower. Arrangement No. 9, the completely
equipped unit, has a mechanical continuous charger with fines separation, cupola with upper tuyeres, bypass to waste heat units consisting
of three-stage air heater, boiler with
one-third required steam capacity
and water cooler. The balance of
steam pressure is to be maintained
in a separate boiler. Units of each
size are interchangeable and may be
assembled in any arrangement as
listed above and also other combinations as desired.

A small plant may purchase Arrangement No. 1; later section G or F and others can be added to make up the more advanced types listed in the various arrangements, utilizing the waste heat by adding upper tuyeres to preheat the combustion air or producing steam for the blowing nozzles, next a mechanical charger can be added, etc., until a complete efficient unit is in operation as illustrated in Fig. 2, Arrangement No. 8, or described in Arrangement No. 9.

Fig. 1: Arrangement No. 1 illustrates a comparatively simple mineral wool cupola



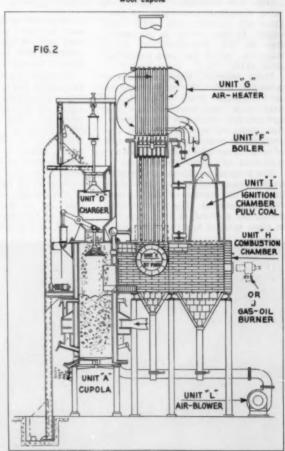


Fig. 2: Arrangement No. 8 shows a complete mineral weel melting and steam producing unit. No. 9 has a continuous mechanical charger

Flotation



Mid-Continent Glass Sand Co., Roff, Okla., uses concentrating tables and flotation to remove two types of iron impurities from glass sand

General view of plant in the background with one of the worked out pits in the right foreground

Beneficiating Glass Sand

By H. E. SWANSON

My the central part of the Arbuckle Mountains, in the State of Oklahoma, are deposits of high-silica sand. Container glassware and plate glass are manufactured using these sands. In this section is the operation of the Mid-Continent Glass Sand Co., which has been producing since 1913.

Until recently, standard washing processes were sufficient to produce an acceptable grade of sand, but with more rigid specifications and new markets developed in later years, this company was faced with the problem of removing small amounts of iron compounds and other impurities that had been unimportant.

The present specifications for high quality glass sand place maximum limits on the amount of iron, to prevent discoloration. The recommended maximum amount of iron impurity in glass sand is approximately 0.025

percent for optical glass; 0.04 percent for flint glass; and 0.065 percent for container and plate glass. Alumina, lime, and magnesia also are limited to minute quantities.

Analyses made by the Oklahoma Geological Survey of the deposits in this region show that these sands are suited for many grades and types of glassware. The crude sand at the Mid-Continent operation contains from 0.26 to 0.40 percent iron impurity which is reduced by processing to 0.044 percent. The silica content, after this processing, runs as high as 99.83 percent. A peculiarity of the deposit was that limonite appears as an impurity in the upper layer of the deposit, while pyrite is found in the lower layer.

In 1939, 12 Buchart concentrating tables were installed for the purpose of removing some of the limonite impurity in the sand. This object could be accomplished on the tables because the specific gravity of limonite is greater than that of sand. When reclaiming operations were carried below the upper layer, and sand was taken from the lower layer. the iron impurity found there (pyrite) would not separate on the tables because of almost identical specific gravities. This impurity, pyrite (FeS2), was tackled in 1941, with eight Denver Sub-A flotation cells. Flotation removed enough of the pyrite to reduce the total percentage of both iron impurities to 0.044 percent, well under the maximum allowable limits for high grade container and plate glass.

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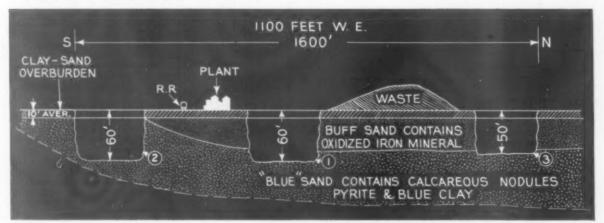
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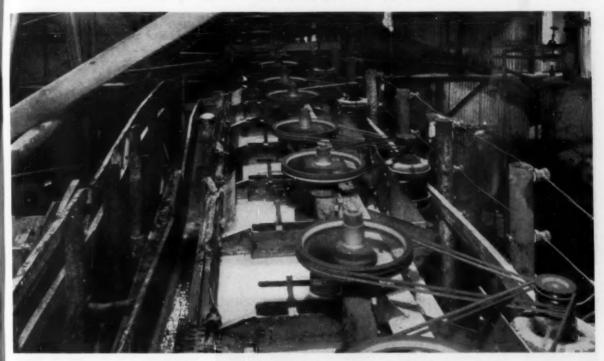
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Sand is reclaimed from an open pit located about 1000 ft. from the



Cross-section showing characteristics of glass sand deposit, overburden, and excavation with relation to plant location



Battery of flotation cells which floats off the pyrites impurities and depresses the sand

washing plant. Overburden, averaging 10 ft. in thickness, composed of sandy clay, is removed by 5-cu. yd. Continental, hydraulic wagon scrapers, pulled by Allis-Chalmers trac-tors. Four tractors are used, three WK gasoline machines and one powered by a HD-7 Diesel. Excavating is done hydraulically. To assist in hydraulicking, the top 14 ft. of the layer is blasted to loosen the sand. Holes, spaced 6 ft. from the edge and 6 ft. apart, are drilled manually to the 14-ft. depth. The deposit consists of grains so loosely cemented together that power-driven drilling equipment is unnecessary. The 11/8in. holes are loaded with 10 sticks of dynamite each. A 35 percent dynamite is used. Usually, three holes are shot at one time.

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After blasting, the sand is washed into a sump by monitors played on the sand at 125 p.s.i. pressure through three 1½-in. hose lines with \(^6_6\)-in. nozzles. A 40-hp. Ingersoll-Rand centrifugal electric motorpump furnishes the water. The sand-water mixture flows by gravity into the sump, and is pumped by a Nye steampowered pulsometer through an 8-in. pipe to the washing plant.

Sand Washing

This pipe discharges to two 48-x 72-in. Leahy vibrating screens through an outlet which separates the flow to the two screens. Both screens have 26-mesh, No. 30-gauge wire, the equivalent of 0.0245-in. square openings. At these scalping

screens, many of the iron concretions are removed and dropped to a waste pit.

Material passing the screens goes, by gravity, through a 12-in. pipe to two cylindrical steel settling bins, 16 ft. high and 9 ft. in diameter. Two tanks are used so that one can be filled while the other is being drained. It takes about one hour to fill a tank with sand.

Waste water overflowing the tanks, circumferentially, feeds to an 8-in. pipe, which in turn carries it to another settling tank by gravity. This tank, 12 ft. high and 9 ft. in diameter, reclaims sand still left in the overflow water from the first two tanks. Overflow from this last tank is piped back to the lake from which

the water supply for the plant is received.

Hydraulic water is added to the sand drawn from the bottom of the tank at the rate of 50 g.p.m. and the sand flows by gravity through a 4-in. pipe to a sump. Addition of water to the sand drawn from the tanks also gives the sand another washing.

A Dayton-Dowd pump, rated at 450 g.p.m. and powered by a 10-hp. G-E motor, furnishes the water and also provides all the washing water for the plant, which is drawn from an 18,000 gal. storage tank.

Sand is withdrawn from the sump by a drag elevator, 42 ft. centers, and discharged into the first of three wash boxes. The drag is powered



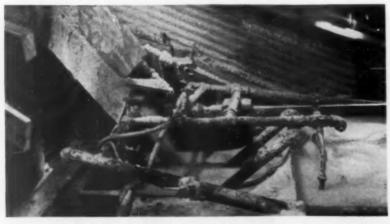
Kenneth P. Larch, partner and manager, to the left, and Wm. E. Ham, Oklahoma Geological survey



Two of the three hose lines used to wash sand to sump



Sump from which pulsometer pumps sand to the wash plant



Showing method of elevating sand pulp from one wash box to another, the piping system creating both a siphon and ejector effect

through a line shaft used to power other equipment in the plant. A 25hp, motor powers the line shaft.

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The sand is sent from one wash box to another through 21/2-in. pipes. These boxes are 4- x 4- x 4-ft. and a 2½-in. pipe from the bottom of the first box extends up and over into the second box through which the sand is delivered. Another 21/2-in. pipe with a 3/8-in. nipple sends water at 60 p.s.i. pressure into the bottom of the pipe through which the sand is transferred, creating both a siphon and ejector, in effect, raising the sand through the pipe. A similar procedure sends the sand from the second box into the third. The waste water, or overflow from the third box is sent by gravity to the waste pit. The Dayton-Dowd pump is used to provide water for this operation.

Concentrating Tables

Sand in the third box is picked up by a bucket elevator, 17 ft. centers, which discharges it to a hopper feeding a 6-in. pipe through which the sand travels by gravity to the concentrating tables. Power for the elevator is taken off the line shaft. This pipe sends the sand to a cylindrical distributor, 3 ft. in diameter, which moves an equal amount of sand to the twelve Buchart concentrating tables.

The distributor has a revolving funnel with 12 pie-shaped openings which govern the amount of sand sent to each table. The sand is sent from the distributor to the tables through $2\frac{1}{2}$ -in. pipes, by gravity. The sand is fed to the tables and dressing water is applied along the length of the feed side and flows over the deck surface.

The tables have a differential reciprocating motion which sends the lower specific gravity sand to the far side for discharge by gravity to a bucket elevator. The higher specific gravity impurities are sent to the other side of the table and then to waste.

The bucket elevator, 17-ft. centers, receives power from the line shaft, and discharges to a hopper which feeds a 6-in, pipe for transference to the flotation cells. The pipe feeds into a hopper box which discharges into two 4-in, pipes, each pipe feeding four cells of the eightcell flotation unit.

Flotation

Reagents used in the Denver Sub-A flotation cells are Aerofloat No. 25, Pentasol Xanthates No. 6, sodium aerofloat, and lime, which combine to float the impurities while the sand is depressed. The sand settles and the "float" is wasted. The flotation cells are powered by four 5-hp. motors, each serving two cells.

From the cells, 4-in. pipes carry

the sand to four dewatering screws by gravity. The screws also receive power from the line shaft. The sand screws discharge to an 18-in, belt conveyor, 80-ft. centers, to either of two stockpiles for draining and storage. Power for the conveyor is from the line shaft. In between the two piles is a 10-in. conveyor trough, 40 ft. centers, which is fed manually. This conveyor, receiving power from another line shaft having a 40-hp. motor, discharges either to a drying kiln, or to a 10-in, belt conveyor, 30 ft. centers, which sends the wet sand directly into railroad cars for delivery.

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Drying

Sand to be dried enters a dryer, 7-ft. diameter and 32 ft. long, which is direct-fired by an Inferno burner using fuel oil. The dryer revolves 1½ r.p.m. and is powered by the second line shaft. Dried sand discharges by gravity to a screw conveyor, 12-ft. centers, which feeds a bucket elevator. Both the screw and the elevator are powered by the second line shaft.

The elevator, 20-ft. centers, discharges to a 4- x 6-ft. vibrating screen having 0.023-in, square openings. This screen is used to remove any foreign materials which may have been picked up during the processing. After passing through the screen, the sand drops to a hopper feeding a bucket elevator, 65-ft. centers, powered from the line shaft, for delivery to a steel cylindrical storage tank. This tank, which is 48 ft. high, 16 ft. in diameter, and holds 480 tons, has side discharge gates for car loading.

A portable conveyor is used to facilitate car loading. This conveyor, using a 3-hp. motor, can be moved anywhere in the box car and assists in more complete loading.

This company produces 300 tons of sand per 24-hour day, the bulk of which is used for glassware manufacture and a small amount is shipped to foundries as molding sand. The plant is served by the St. L. & S. F. R. R.

Water Supply Conservation

Using an abandoned pit near the plant, three lakes were made by construction of two dams. Waste water from the plant is piped to the first of these lakes. All three of the lakes also receive seepage water. Connecting the lakes are 8-in. pipes through which water is siphoned from one lake to another. Thus, clear water is available in the third lake, which is used for all washing operations at the plant. Water is piped from the third lake to the 18,000-gal. storage tank at the plant. The plant and quarry use 1100 g.p.m.

(Continued on page 84)



Conveyor chute between two stockpiles of wet sand which is used to convey sand to dryer or to care



Showing some of the 12 concentrating tables for removing limonite impurity from the glass sand



One of two large settling tanks, 16 ft. high and 9 ft. In diameter

Crushed Stone

War Controls - Post-War Problems

National Crushed Stone Association annual convention in New York City considers cost saving operating methods, agricultural limestone production, price controls

A PPROXIMATELY 500 members, associate members and guests attended the twenty-eighth annual convention of the National Crushed Stone Association, January 29-31, at the New Yorker hotel, New York, N. Y. The program was designed to consider problems of the industry relating to the war effort and postwar

Two of the outstanding sessions were special meetings, one for operating men that featured a ready interchange of ideas on all manner of operating problems and one for agricultural limestone producers that considered A.A.A. policies and plans, price controls and soil conservation practices in general.

War production controls, postwar construction, merchandising, the trends in asphaltic pavements, management and industrial relations, the outlook for business in 1945, and the legal aspects of defending suits for alleged damage from blasting were other timely topics up for consideration

Fred O. Earnshaw presided over the opening general session on January 29, extending his greetings and calling the convention to order. Mr. Earnshaw thanked the vice-chairmen for their good work during the past year.

Business Conditions

The first order of business was the report on business conditions during 1944 and the outlook for 1945, which was a summary of reports submitted by the regional vice-presidents. Mr. Earnshaw read the reports. Judging from these reports, the year 1945 will not compare too unfavorably with 1944 although an anticipated volume of business less than in 1944 was forecast in some regions. Labor is expected to hold down the demand, and an unusual demand is anticipated by some producers in the event of an early victory.

W. T. RAGLAND had reported a volume of business in 1944 less than in 1943 for the southeastern region with little changes in prices. The distribution was 38 percent of the tonnage for highways, 20 percent for railroads, 15 percent building construction and 5 percent to agricul-

ture. Prospects for 1945 are uncertain but a lower demand for crushed stone than in 1944 is anticipated. Truck deliveries will comprise the chief difficulty to operation.

The southwestern region had a volume of business in 1944 that was 30 percent less than in 1943, according to W. F. Wise' report. Conditions in that region appear favorable in railroad and agricultural business in 1945. Thirty-nine percent of the volume was for highways and 37 percent was railroad ballast. Prospects are for a volume of business in 1945 equal to that for 1944, with the lack of manpower holding down the demand.

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Northern producers had a good year in 1944, when compared to 1943, with a higher price level, reported A. J. Cayla. Volume of demand was 60 to 70 percent of capacity. Distribution of sales was 60 percent chemical stone, 20 percent to railroads, 5 percent for building and the balance miscellaneous. It was predicted that 1945 volume will equal that for 1944.

In New England, conditions were



Members and guests at the convention banquet, National Crushed Stone Association



Breakfast business meeting of Manufacturers Division

spotty. T. C. Cooke had reported one company with an increase in volume of business of 43 percent while a neighboring company had a decrease of 75 percent in 1944 compared to 1943. Prices remained the same. The tonnage for highways varied from 5 to 100 percent with an average of approximately 35 pecent over the New England states. About 35 percent of the tonnage was for railroad and 14 percent for building construction. Volume of business in 1945 is expected to hold at 1944 levels. Difficulty is expected in securing sufficient railroad cars and trucks and the manpower situation is expected to grow worse

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In the eastern region, volume of business in 1944 was a little less than in 1943, according to F. W. Schmidt, Jr. There was a 10 percent increase in commercial stone shipments and the volume of agricultural and chemical stone was good. Business is expected to decline in 1945, with manpower the chief obstacle to operations.

Volume in the central region varied among individual producers from a decline of 25 percent in 1944 as compared to 1943 to a slight increase. Prices remained the same. Manpower and car shortages will contribute to a lower volume in 1945. The demand for chemical and metallurgical stone and for agricultural limestone will be good.

Volume in the midwest declined from 10 to 35 percent, according to a report by Paul M. Nauman, and there was no change in price level. The manpower situation is extremely bad and prospects for 1945 are not optimistic. All producers had reported a shortage of trucks because large tires are unavailable. Distribution in 1944 was 25 percent to highways, 20 percent to railroads, 5 percent for building construction and the balance miscellaneous. An unusually good demand is anticipated if there is an early victory.

Officers and Directors

The following officers have been re-elected for the year 1945: president. F. O. Earnshaw; regional vice-presidents, A. J. Cayla; T. C. Cooke; Paul M. Nauman; W. T. Ragland; F. W. Schmidt, Jr.; W. C. Sparks; A. J. Wilson; executive committee, F. O. Earnshaw, chairman; G. A. Austin; L. J. Boxley; Otho M. Graves; Russell Rarey; W. F. Wise and A. L. Worthen, James Savage, Buffalo, N. Y., succeeds Wm. E. Hilliard as treasurer, E. Eikel takes the place of W. F. Wise as regional vice-president, and T. C. Cooke and Milo A. Nice have been added to the executive committee.

The board of directors includes F. O. Earnshaw, Youngstown, Ohio, chairman; Wm. M. Andrews, New Castle, Penn.; G. A. Austin, Decatur, Ga.; C. C. Beam, Melvin, Ohio; L. J. Boxley, Roanoke, Va.; J. E. Bryan, Raleigh, N. C.; J. Reid Callanan, South Bethlehem, N. Y.; W. N. Carter, Joliet, Ill.; A. J. Cayia, Manistique, Mich.; T. C. Cooke, Swampscott, Mass.; Arthur F. Eggleston, Meriden, Conn.; E. Eikel, New Braunfels, Texas; Wilson P. Foss, Jr., New York, N. Y.; Otho M. Graves, Easton, Penn.; E. E. Haapala, Zumbrota, Minn.; G. F. Hammerschmidt, Elm-

hurst, Ill.; R. G. L. Harstone, Hamilton, Ontario, Canada; J. L. Heimlich, LeRoy, N. Y.; R. P. Immel, Knoxville, Tenn.; E. J. Krause, St. Louis, Mo.; J. C. Lauber, Minneapolis, Minn.; M. E. McLean, East St. Louis, Ill.; Paul M. Nauman, Dubuque, Iowa; W. T. Ragland, Raleigh, N. C.; H. E. Rainer, Buffalo, N. Y .: Russell Rarey, Columbus, Ohio; John Rice, Easton, Penn.; J. A. Rigg, Fort Spring, W. Va.; H. E. Rodes, Nashville, Tenn.; Dan Sanborn, Kankakee, Ill.; James Savage, Buffalo, N. Y.; F. W. Schmidt, Jr., Morristown, N. J., W. C. Sparks, Princeton, Ky .: O. M. Stull, Rocky Point, Va.; H. M. Thomas, Fort Scott, Kans.; W. H. Wallace, Bay Port, Mich.; E. K. Webster, Lockport, N. Y.; W. S. Weston, Columbia, S. C.; D. L. Williams, Ripplemead, Va.; A. J. Wilson, Watsonville, Calif.; W. F. Wise, Dallas, Texas, and A. L. Worthen, New Haven, Conn.

Manufacturers' Division

Bryant Currier, The W. S. Tyler Co.; Irving Deister, Deister Machine Co.; S. S. Ellsworth, Ensign-Bickford Co., and J. H. Huether, General Electric Co., have been added to the board of the directors of the manufacturers' division of the National



Meeting of the Board of Directors, National Crushed Stone Association, with President F. O. Eurnshaw, standing at the head of the table

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Left to right: Dale W. Detwiler, P. C. Kensinger, and Paul Detwiler, all of New Enterprise Stone & Lime Company



O. M. Stull, Liberty Limestone Corp., left, talking with A. T. Goldbeck

Crushed Stone Association, Inc. Mr. Currier replaces Fred Braun of The W. S. Tyler Company as a member of the board.

Engineering Activities

Engineering Director A. T. Goldbeck followed with a report of engineering activities. He enumerated special laboratory researches undertaken, special work done for member companies, conferences held in vari-

ous sections of the country, technical articles that have been published, technical committee work and discussed the short courses he has been conducting for salesmen.

One of the laboratory researches, that is particularly timely is on stone sand and the effect of air-entraining cements on concrete of all types ineluding those made with manufactured sand. These cements have been found to greatly improve

the workability in all concretes; less mixing water is required and greater durability has been noted in exposed concrete structures.

Considerable work has been done on airport jobs involving stress analyses for unusually heavy loading, temperature changes, etc., and in connection with bituminous surfaces. In addition to the foregoing, a number of other laboratory investigations have been made and a variety of special projects were undertaken for member companies. The short courses held for salesmen by Mr. Goldbeck have been well accepted.

E. W. Bauman, field engineer, in his annual report, summarized his outside activities with public officials, construction agencies and special work for individual companies in the solution of their problems in the field. Mr. Bauman urged that member companies keep him posted as to local meetings that are to be held which might be of interest to him, and that they have their customers call on him when they come to Washington.

Much time has been spent, said Mr. Bauman, in the review of specifications for the purpose of considering revisions. During the past year, he has been in all the regions except the western and northern.

ADMINISTRATIVE DIRECTOR J. R. BOYD, in his annual report, discussed the work of the executive committee in connection with the Dixon blasting case against the New York Trap Rock Corp., the status of the proposal retirement plan for the Association personnel in Washington, the possibilities for establishment of permanent headquarters in Washington and other business matters.

In the matter of governmental regulations, his office has been particularly active in clarifying the P-56 mining order, and in interpreting the 3 percent transportation tax, various conservation orders, WMC regulations

(Continued on page 69)



Delegation of General Crushed Stone Co. officials at the convention

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Precisionbilt to Protect Life - Equipment · Operations · Periscopes are. built with precision. So is J&L Wire Rope. Safety of human life . . . protection of equipment . . . maintenance of operations . . . depend on the quality of the wire rope you use. To give you the greatest protection ... J&L builds wire rope with precision ... from J&L Controlled Quality Steel ... by men of skill and experience . . . on machines of the latest design . . . and pre-forms it for

JONES & LAUGHLIN STEEL CORPORATION

GILMORE WIRE ROPE DIVISION

greater efficiency and resistance to fatigue.

MUNCY.

RE-FORMED

ROCK PRODUCTS, March, 1945

PERMASET PRECISIONBILT PRE-FORMED WIRE ROPE

WIRE PRE-FORMED J&L PERMASET PRECISIONBILT

PRECISIONBILT er, in d his in the a the memed as PERMASET e held him, omers

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Every contractor knows that profits depend upon completing each job with the lowest possible expense. That calls for power-driven equipment mounted on Firestone tires.

Big, tough and rugged, these tires are built specifically for the job of making modern earth-moving equipment more profitable.

Unexcelled for strength and quality, Firestone tires stay on the job longer, on all machines... under all conditions. That's why you can depend on them to increase the operating efficiency of your equipment.

For the best in music, listen to the "Voice of Firestone" with Richard Crooks and Gladys Swarthous and the Firestone Symphony Orchestra conducted by Howard Barlow every Monday evening over NBC network.



WORK AT LOWER COST

OFF-THE-HIGHWAY TIRES





with Primacord.

Primacord allows effective loading, because it detonates every cartridge in the hole. Loads can be varied according to rock strata, split into decks, given the right power at the right place.

Primacord allows effective timing, because its detonating wave is practically instantaneous, but moves in a definite sequence. Front rows shoot first, relieving the pressure a split second ahead of the back row shots.

Primacord allows effective firing, because it imparts a powerful detonation to each cartridge, results in full efficiency of the explosives.

Primacord allows effective working, because it gives better fragmentation for easier handling.

THE ENSIGN-BICKFORD COMPANY . Simsbury, Connecticut



Five fingers up for five reasons to choose Primacord Detonating Fuse.

Also ENSIGN-BICKFORD SAFETY FUSE **Since 1836**

PRIMACORD-BICKFORD Detonating and in procuring machinery for various members. In one case where a plant burned down, machinery was released to put it back in production.

Manpower problems will constitute one of the important difficulties in 1945, and the situation is getting worse, according to Mr. Boyd. In the face of requirements for 1,600,000 men for the services and industry in the next six months he said it will be impossible for the industry to hold any men under 30 years of age. The National Service Act will be passed in modified form, in his opinion.

The flux stone industry has a No. 1 priority rating and agricultural limestone No. 2, but it is very likely that tires for trucks will be unavailable. The truck situation will be bad at least until late in 1945, said Mr. Boyd.

The matter of re-employment of war veterans came in for considerable comment. Mr. Boyd said there is a serious need for companies to develop policies covering re-employment. He urged that member companies get busy and suggested that it might be appropriate for individual companies to appoint an individual to contact returning veterans and interview them. Seniority, the placing of the handicapped, salaries, types of work, etc., are matters which he urged should be given consideration.

In conclusion, Mr. Boyd said that 12 new active members and three new associate members had joined the National Crushed Stone Association in 1944.

Military Situation and the Job Ahead

The first session concluded with an inspiring talk, "The Military Situation and the Size of the Job Ahead," by Lt. Col. Timothy A. McInery, of the Speakers' Branch, Bureau of Public Relations, War Department, Washington, D. C. The Colonel had recently returned to the United States from active service in the European theater of war.



HER

E. E. Haapala, Zumbrota, Minn., left, and Ed. J. Leary, River Falls, Wis.

At the conclusion of the morning session, a greeting luncheon was held. Following lunch, two war films were shown, one entitled "Earthmovers," an official War Department picture, and the other, entitled "The Life and Death of the Hornet," was a Navy Department official picture.

The first film, as its title implies, depicted heavy equipment of all types in action on all the fighting fronts. "The Life and Death of the



G. A. Austin, Consolidated Quarries Corp.

Hornet," chronicled the career of the aircraft carrier until it was finally sunk.

C. A. SANBORN, Machinists' Mate First Class, United States Navy, emphasized the valuable training given to the Seabees that should be important to the crushed stone industry after the war, in his talk, "What the Seabees are Doing for You." Mr. Sanborn is the son of W. R. Sanborn, president of the Lehigh Stone Co., Kankakee, Ill., and brother to Dan Sanborn, a member of the board of directors of the National Crushed Stone Association. Machinist's Mate Sanborn was a member of the crusher crew that saw action in Guadalcanal. The course of study for Seabees, as he described it, is very intensive and teaches the men earthmoving practices, blacksmithing, drilling, maintenance and many other operations essential to producing crushed stone.

MILO A. NICE, Hercules Powder Co., chairman, Manufacturers' Division, presided at the general luncheon on Tuesday, January 30. A dramatic and timely picture of the power and machines that are helping win the war was unfolded in a talk, "Power for War and Peace," presented by C. M. RIPLEY through the courtesy of the General Electric Co. Mr. Ripley, well-known engineer, author and lecturer, outlined the electrical industry's part in the war production and some of the probable applications of wartime developments.

Banquet Addresses

PRESIDENT FRED O. EARNSHAW presided at the annual banquet Tuesday evening, which was preceded by a reception for all in attendance at the convention. The featured address was an inspiring talk by Col. WILLARD CHEVALIER, vice-president of the McGraw-Hill Publishing Co., New York City. Col. Chevalier analyzed the fallacies of a planned economy such as the setting of definite employment goals, as against true free American enterprise which must create jobs through the creation of demand for industry products.

R. J. REIGELUTH, chairman of the executive board, National Safety Council, and treasurer, The New Haven Trap Rock Co., New Haven, Conn., presented the National Crushed Stone Association safety awards at the banquet. RALPH E. ROSCOE, vice-president, Bessemer Limestone and Cement Co., Bessemer, Penn., was present to receive the trophy for his company, winner of the 1943 competition. Certificates were presented to other winners.

Reports of the convention committees were presented at the concluding session. A resolution was passed that appropriate messages be transmitted from the Association to the families of members who had passed away during 1944. W. H. Lindsay, a former director, Charles D. Brewer and Max Altgeld were so honored. Other resolutions passed expressed appreciation to the New Yorker Hotel for its cooperation in handling the convention, to the Manufacturers' Division for its financial contribution of over \$3,000 to the Association funds, and to the principal speakers at the convention.

Manufacturers' Division

MILO A. NICE, Hercules Powder Co., presided at the annual breakfast business meeting on Tuesday, January 30. The principal discussion was concerned with the method of appropriation of funds for 1945, which will be raised to help defray the Association expenses. J. R. Boyn, (Continued on page 86)



R. E. Roscoe, left, and Harry E. Reed, Sessemer Limestone & Coment Company



√ stays on √ saves wear √ helps keep them smooth-running

FOUR REASONS... WHY GULF LUBCOTE IS A SUPERIOR LUBRICANT FOR OPEN GEARS

- 1. GULF LUBCOTE is a heavybodied product with a high degree of adhesiveness for metal surfaces —it stays on!
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GULF LUBCOTE is made in seven grades, to provide for various methods of application and a wide range of operating conditions.

GULF LUBCOTE NO. 1 can be applied at normal atmospheric temperatures without heating, by brush, swab, or bath. In addition to gears this grade is an excellent lubricant for: flexible couplings, chains, cables, center plates and hub liners (railroads).

GULF LUBCOTE H.S. is especially manufactured to withstand the washing action of water. It is of medium viscosity and can usually be applied by hand without heating. Additional uses: chains and wire cables.

GULF LUBCOTE NO. 2 has approximately the same consistency as the H.S. grade. Principal uses: motor gears (street railways), guy wires, wire rope.

GULF LUBCOTE NO. 3 should be heated for easy application. Principal uses: chains, or applications where lubricants are subjected to transmitted heat.

GULF LUBCOTE NO. 5 must be heated for ready application. This grade has high heat resisting properties—a decided advantage when used on gears exposed to high operating temperatures.

GULF LUBCOTE TRACTION has the consistency of a No. 3 Cup Grease. It can easily be applied by hand at normal temperatures. Recommended for gears of street railways, mining and yard switching locomotives, etc.

GULF LUBCOTE W.R. is especially compounded for use by manufacturers

in laying up wire rope and for impregnating hemp centers.

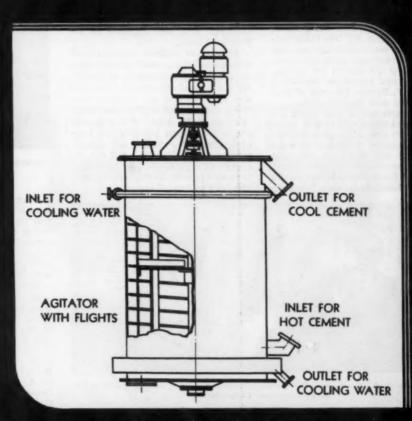


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NEW YORK, N. Y.

Ready Mix

Starts Research Program

National Ready Mixed Concrete Association Directors' Meeting discusses manpower probblems, air entraining agents, and merchandising

A n open meeting of the Board of Directors, National Ready Mixed Concrete Association, was held at the Hotel New Yorker, New York, N. Y., January 24 and 25. The 15th annual formal meeting of the Association had previously been cancelled, prompted by the appeal for curtailment of travel issued on January 5 by James F. Byrnes, Director of War Mobilization and Reconversion.

Similar action had been taken for the National Sand and Gravel Association 20th annual meeting scheduled for January 23-25 and an open meeting of its Board of Directors was held preceding the open Board meeting of the National Ready Mixed Concrete Association (see February issue for reports of National Sand and Gravel Association Board meetings). Joint sessions of the two Board meetings were also reported in the February issue.

Association business matters were transacted at the meetings and some of the subjects originally scheduled for the annual convention, including the open forums on engineering problems, merchandising and labor relations were held. Members and guests from local ready-mixed concrete companies swelled the attendance and contributed toward the exchange of experiences and ideas that have always been an outstanding feature of the annual convention.



Left to right: V. P. Ahoarn, executive secretary; Stephen Stepanian, retiring president; and C. W. Shiray, new vice-president



C. W. Shirey, new vice-president of the National Ready Mixed Concrete Association, left, and Robert Mitchell, president of the National Sand and Gravel Association



Alexander Foster, Jr., elected president

New Officers

ALEXANDER FOSTER, JR., vice-president of the Warner Co., Philadelphia, was elected president of the National Ready Mixed Concrete Association to succeed Stephen Stepanian. C. W. Shirey, Waterloo, Iowa, was elected vice-president and Alexander Johnson, Brooklyn, N. Y., was re-elected secretary-treasurer.

Elected to the Board of Directors were Louis C. Shilling, Miami, Fla., E. K. Davison, Pittsburgh, Penn., T. E. POPPLEWELL, Fort Worth, Texas, and S. H. MOORE, San Diego, Calif. E. J. Goodpastor, San Francisco, Calif., C. Gray, Indianapolis, Ind., Herbert Jahncke, New Orleans, La., E. J. Nunan, Buffalo, N. Y., H. C. Peters, Milwaukee, Wis., Robert F. Porter, Baltimore, Md., Joseph M. Scheinin, New York, N. Y., F. P. Spratlen, Jr., Denver, Colo., Julius Warner, Cincinnati, Ohio, James F. McCracken, Louisville, Ky., Joseph H. Dixey, New York, N. Y., and Stephen Stepanian, Columbus, Ohio, complete the Board of Directors. J. F. McCracken, Joe Dixey and Stephen Stepanian are the three latest past presidents.

PRESIDENT STEPANIAN, in opening the meetings, briefly reviewed 1944 activities of the Association and progress including engineering accomplishments, the safety program to be launched after the war, the arrangement with the University of Maryland for research in the interest of the ready-mixed concrete industry and priority and other governmental matters. He announced that Delmar L. Bloem, research engineer, has been added to the laboratory staff and mentioned the activities of the Truck

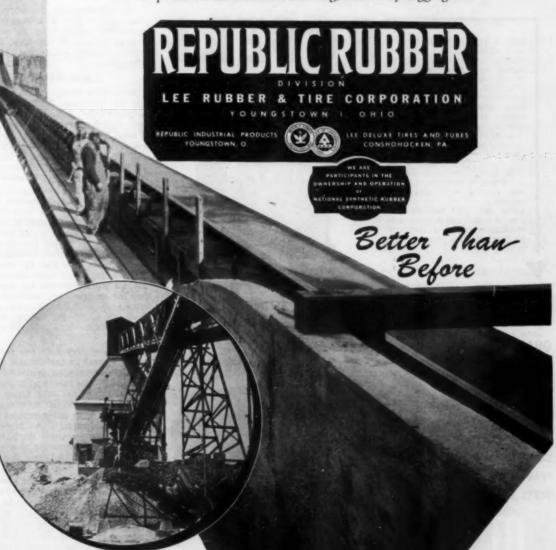
(Continued on page 74)

ABRASION RESISTANCE, STRENGTH and LONG SERVICE · · · BUILT INTO

Republic Conveyor Belts

HROUGH the scientific selection of correct types of man-made rubbers and reinforcing materials, Republic technologists today are constructing conveyor belts for specific uses. Sharp, heavy rocks demand one specification, sand and aggregates require another—each requires specific properties, resistance to abrasion, to tearing and cutting, to impact or shock. Republic has studied each type of service and builds the necessary qualities into each Republic belt at the factory.

Consult your Republic Distributor on applications for Super Excelo Reprene and Record Maker Conveyor Belting, Republic Chute and Launder Lining, and Pulley Lagging



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ROCK PRODUCTS, March, 1945

(Continued from page 72)

Mixer Manufacturers' Bureau during the past year. In concluding, he announced that the Association now has 193 active members and 30 associate members

EXECUTIVE SECRETARY V. P. AHEARN, in his annual report, summarized the activities of his office and discussed renegotiation, the re-employment of war veterans, priorities, price ceilings and price relief, and other matters of government control. In commenting on industry conditions, he said that production of the industry decreased from approximately 24 million cubic yards in 1942 to 15 million cubic yards in 1943, to 11 million cubic yards in 1944 and that a further decline is anticipated for 1945.

Mr. Ahearn read some of the most significant facts from a paper, "Readjusting the Veteran to Civilian Life," by Major General Lewis B. Hershey, Director, Selective Service System, originally prepared for presentation to a combined session of the National Ready Mixed Concrete Association and the National Sand and Gravel Association that was cancelled. Mr. Ahearn emphasized the legal obligations of industry in providing employment for discharged war veterans. General Hershey's paper was abstracted in the February issue of Rock Products.

In discussion priorities, Mr. Ahearn was pessimistic as to the outlook for procuring heavy-duty truck tires and pointed to the increasing immobilization of the industry's trucks. Military demands for heavy duty tires alone exceed the available supply, he said.

In his discussion of price relief, he emphasized that operations started since March, 1942, must secure O.P.A. approval of their price structures, whether the plants built are permanent or temporary operations. The ready-mixed concrete industry is not required to file prices with the O.P.A., he said.

He reviewed the instances where the industry has been granted price increases, justified by increases in cement prices, in the New England States, Ohio, California and the Northwest.

Labor Relations

EXECUTIVE SECRETARY V. P. AHEARN led an informal discussion on the subject of labor relations. RAY WAR-REN. Western Pennsylvania Sand and Gravel Producers' Association, was asked to comment on a recent dispute case with a teamsters' union. He previously had reported the case at the National Sand and Gravel Association meetings.

The union had demanded a wage increase from 93c per hour to \$1.25 per hour for mixer truck drivers and an increase to practically the same figure from 901/2c per hour for dump truck drivers. Other demands were for time-and-one-half for work over 8 hr. a day, plus time-and-one-half for all work over 40 hr. per week, pay for six unworked holidays, double time-and-one-half for work on the holidays and two weeks' vacation with pay after five years of employment.

The producers held out for a tripartite panel in the dispute and the panel recommended denial to all the demands. The case was brought before the regional War Labor Board on January 2, which concurred with the ruling with the exception of the vacation demand. A new panel granted the vacation demand. The truckers are appealing the case to the National War Labor Board.

ALEXANDER JOHNSON told of a union demand that hours be definitely fixed; also for overtime payment if part of a lunch-hour is worked.

Mr. Ahearn emphasized that the industry is not subject to the provisions of the Bacon-Davis Act unless plants are actually located on construction project sites. Neither are drivers subject, who go on these project sites.

(Continued on page 76)

READY for your toughest Reductions

Each crusher in the 16 different sizes of Rogers Jaw Crushers manufactured is individually designed and correctly propor-tioned. Bearing sizes are selected from SKF self-aligning spherical roller bearings two to three sizes larger than normally mended and used. Shaft dlameters are correspondingly oversize, resulting in long life for the bearings and shaft.

The eccentric bumper and crusher bed are of massive construction heavy ribs properly located to give maximum strength and rigidity with minimum weight.

These and other features combine to make Rogers Jaw Crushers sturdy, economical and trouble free reduction units.





15" x 36" Jaw Crusher (SKF Roller Bearing)



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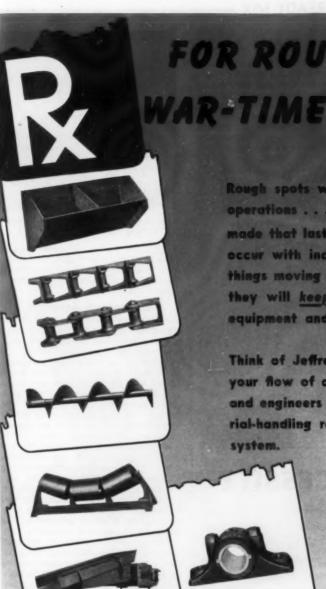
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FOR ROUGH SPOTS OF WAR-TIME PRODUCTION

Rough spots will always crop up in the flow of operations... no machine or part has yet been made that lasts forever. Nowadays, breakdowns occur with increasing frequency. You can start things moving again with greater assurance that they will keep moving by relying upon Jeffrey equipment and replacement parts.

Think of Jeffrey when a rough spot develops in your flow of operations. Jeffrey has technicians and engineers to help you coordinate your material-handling requirements into a smooth-running system.

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(ACCURATE GRAVIMETRIC FEEDING)



THE BELL BY MANUFACTURING COMPANY PURPLE PORTS FOR THE PORTS POSSESS RESERVED IN ONLO

(Continued from page 74)

In discussing manpower, Mr. Ahearn said that the ready-mixed concrete industry is not included on the essential list of industries because it is not nationally essential. That fact does not mean the industry is non-essential, he said, because whatever construction is being served must be important. Manpower problems must be worked out locally. The industry has been declared locally essential in California, he pointed out.

Discussion on manpower concluded with reports from members in all sections of the country as to manpower conditions. The industry has

enjoyed very cooperative relations with local draft boards and War Manpower Commission offices, according to the reports. Under today's conditions of declining markets, manpower shortages are not particularly serious, although manpower ceilings have been reduced in many cases. One producer mentioned that his plant has only one-half its normal complement of men, but, actually, double the number needed under present conditions. Another producer said he had sufficient men but that conditions would be serious if he received a few good orders. A third producer, still active on war contracts, said he had been successful in



Alex. Johnson, left, and Jee Dixey "talking

having the prime contractor furnish men from his (the contractor's) payroll. Salaries for these men were paid by the producer, who was a subcontractor.

Engineering Activities

STANTON WALKER, Director of Engineering, reviewed briefly the engineering activities of the past year, touching on committee work, the publication of technical literature, work in cooperation with the Truck Mixer Manufacturers' Bureau, engineering and consulting service provided member companies, etc. The booklet "Control of Quality of Ready Mixed Concrete," in work for several years was published in 1944.

Mr. Walker commented on the arrangements made for the establishment of a research laboratory at the University of Maryland and announced the acquisition of a research engineer, Delmar L. Bloem, who will devote the major portion of his time to research of direct interest to the ready-mixed concrete industry.

One of the activities in research mentioned was a laboratory study of the concrete-making properties of light-weight, expanded, blast furnace slag made in behalf of a member company. A report of the results of the investigation, which included the use of both normal and air-entrain-



Facing the camera, J. F. McCracken, left, and D. D. Reynolds



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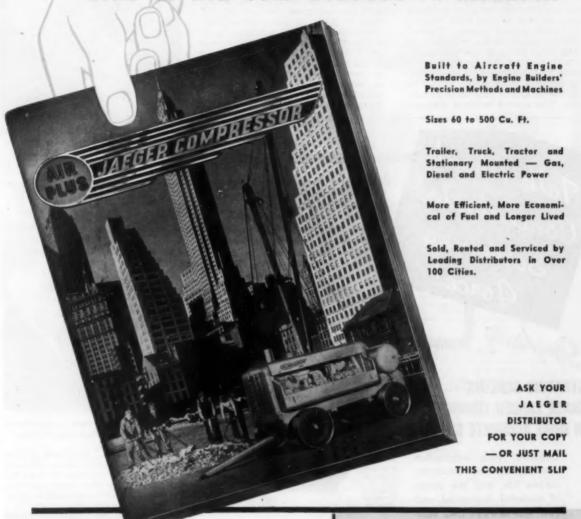
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- super-cooling and drying compressed air.

Vibration Fliminated

- a new life insurance policy for air compressors.

Tractor Mounted and Powered Air Compressors.

More Air from Less Fuel -new standards of economy.

Force feed lubrication, lifetime construction, "ultra-lapping" and many other advanced features IN THE MOST BEAUTIFUL LINE OF AIR COMPRESSORS YOU'VE EVER LAID EYES ON.

The JAEGER Machine Co.

603 Dublin Ave. Columbus 16, Ohio

Gentlemen: Please send copy of your complete catalog describing Jaeger "AIR PLUS" Compressors.

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- READY MIX -

ing cements, will be distributed to the membership in the near fuure.

Other research of particular interest to the industry was conducted on air-entraining cements by the Warner Co. in coöperation with the Association. Some of the early investigations on this subject were reported at the last annual meeting. Two additional investigations were made in 1944. One involved the transportation of 5-cu. yd. batches of concrete made with normal and air-entraining cements, in agitators, hauled for various periods of time up to 90 minutes. The second involved compari-

sons of concrete, made with airentraining and normal cement, hauled in an agitator and in a nonagitating type of body. Data from these tests probably will be made available in the form of a report.

In concluding, Mr. Walker outlined some of the problems which suggest themselves for study. Among those which, in Mr. Walker's opinion, would be of particular interest are studies of various air-entraining agents and of various admixtures, particularly as related to problems of readymixed concrete production. The industry is interested in any phase of



H. M. Thomas, Ft. Scott Hydraulic Cement Co., left, and Donald W. Aitken

concrete technology, he said, and the success of the ready-mixed concrete industry depends upon the success of concrete.



J. A. O'Connor, to the right, a former Detroit producer of ready mixed concrete

H. C. Peters, chairman of the Truck Mixer Manufacturers' Bureau, reported on the meetings held by the Bureau during the year, and the (Continued on fage 30)



Julius Warner and Claude Clark, two Ohioans in a haddle

Talk About
Concentrated
Screening
Gorce!
Simplicity

On Simplicity Gyrating Screens all force is concentrated directly across the screen surfaces. The counterbalance is machined directly on the shaft, and it exactly balances the weight of the entire vibrating screen deck assembly. In this way it "builds up" positive action across the screen surfaces with perfect smoothness. This is one of the many Simplicity reasons for improved screening.

GYRATING SCREENS GRADE LARGER TONNAGES IN MORE ACCURATE SIZES

Consider your separation in terms of screen capacity, screen life, and the grade of material separated and you will always find Sim-

plicity Gyrating Screens on top in the long run.

Your own screening problem may fit into one of the hundreds solved with complete satisfaction by the army of Simplicity users. And if it is something of an extra special nature, the broad experience of Simplicity Engineers can be relied upon to produce an answer that will give you both quality and economy in operation.



ENGINEER COMPANY . DURAND, MICH.



THORNTON gives positive DRIVE TO BOTH REAR AXLES Without Axle Fight

Trucks operating off the highway must have 2 rear driving axles with positive drive to provide maximum

The THORNTON 4-Rear-Wheel DRIVE has proved, through years of grueling work and severe war demands, that it does deliver "go ahead"

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traction under the most obstinate conditions (and provides 100% more payload; up to 50% gradability; and, certain definite operation economies).

Whether you haul logs from the woods; sand and gravel from the pits; coal from the mines; spread lime over soft fields; or haul heavy

oil field equipment; you need the maximum traction provided by the Thornton Drive. Thornton equipped trucks have the power and traction to operate in all kinds of weather, over all kinds of roads.

They will work many more days per year than a conventional truck having only one driving axle.

However, positive drive to the rear driving axles is not all that is required to give you the greatest number of truck-work days per year. The Drive also must have Differential Action to avoid "axle fight" which causes tires to scuff, wastes fuel, and destroys ring gears, pinions, joints, etc.

* NO WPB RELEASE NECESSARY

The heart of the THORNTON DRIVE is the THRONTON automatic-locking DIFFERENTIAL—an exclusive feature which provides both POSITIVE DRIVE and DIFFERENTIAL ACTION.

Thornton's solution to the problem of obtaining "off the highway traction" without having "axle fight" represents one of the outstanding contributions to the automotive industry during the past 30 years. This automatic-locking DIFFERENTIAL, as an integral part of the Thornton Drive, enables the truck to drive as long as there is traction on the wheels of either axle. Its automatic Differential action permits an over or under running of the ring gear of either axle as required by the contour of the road bed, whether moving forward or in reverse.

When the THORNTON DIFFERENTIAL is also used in place of the conventional differential in each driving axle, the ultimate in traction is provided, because all wheels must rotate when power is applied.

FREE: Mail coupon for descriptive folders and full details about the Thornton Four-Rear-Wheel Drive.



THORNTON 4-Rear-Wheel DRIVE

INCORPORATES A

THORNTON Locking DIFFERENTIAL

ALSO AVAILABLE FOR TRUCK AXLES

Thornton Tandem Co.

8701 Grinnell Avenue, Dept. 14, Detroit 13, Michigan, U.S.A.

Please send me catalog of facts on changing my 1½-2 ton truck into a heavy duty truck.

Year

ROCK PRODUCTS, March, 1945

(Continued from page 78) standard sizes of mixers recommended by the Bureau were approved at his meeting by vote of the Board of Directors.

H. F. Thomson reported on the safety contest for the ready-mixed concrete industry which is under consideration as a postwar activity. of the association.

Air-Entraining Agents

A IR-ENTRAINING AGENTS were the main subject of a highly interesting session on engineering problems of the ready-mixed concrete industry. C. E. Wuerpel, Principal Engineer, Central Concrete Laboratory, Corps of Engineers, U. S. Army,

led the discussion and, with Director of Engineering Stanton Walker, answered technical questions from the floor.

In introducing the subject, Mr. Walker commented briefly on the difficulties in the control of air-entraining cement concrete when made as ready-mixed concrete. The long time of mixing involved and relatively long hauls were mentioned as factors that handicap the ability to control the amount of entrained air. Mr. Walker believes that some of the troubles stem from the cement itself and, in particular, from the method of introduction of the air-entraining agent to the cement.

The War Department has used over 2,000,000 bbl. of cement containing vinsol resin in over 168 projects with generally good success, but success has not been uniformly perfect even after changing to neutralized vinsol resin. The specifications have been recently changed, making it elective with the district engineer whether the air-entraining agent be added to the cement at the mill or to the concrete at the mixer. Mr. Wuerpel's opinion is that the future of air-entrainment lies in the addition of the agent at the mixer, where the amount that is necessary to put in the necessary amount of air may be added to suit the particular project.

As a result of extensive laboratory study, recently directed entirely toward the use of the air-entraining agent as added at the mixer, according to Mr. Wuerpel, data indicate that air-entraining agents can be used with proper accelerators which will develop all the desirable attributes of vinsol resin with improvements in strength of concrete and in bond with reinforcing steel. In concluding his introductory remarks, Mr. Wuerpel said the industry has not yet learned how to use air entrainment properly and that when knowledge is gained its use will become general.

ALEXANDER FOSTER, Warner Co., expressed the opinion that if the airentraining agent would be added at the mixer it would be of benefit to the ready-mixed concrete producer,

(Continued on page 82)



Joe Dixey and E. J. Nunan



SEWN OR PASTED BAG



CEMENT LIME PLASTER FERTILIZERS PIGMENTS

CHEMICALS

For tough, sturdy, attractively printed "standthe-gaff" paper bags specify "HAMMOND dling in any kind of weather.

HAMMOND BAG & PAPER CO. Paper Mill and Bag Factory

WELLSBURG, W. VA.

SHIPPED INTACT Quickly Installed

... CP "Package Type" Compressor

SHIPPED intact, all ready for external connections, CP Type Y Compressor is easily and quickly installed. It is exceptionally compact, requiring only minimum floor space. Large area Simplate valves, multi-step capacity regulation, effective intercooling, precision bearings and force-feed lubrication are responsible for its low power consupplied in and low maintenance costs. CP Type Y compressors with built-in or direct coupling motors

or with V-belt drive are available in capacities of 300 to 900 c.f.m. at 80 to 125 pounds pressure; other sizes available for higher and lower pressures. Write for Bulletin 766.

There is a CP Compressor, stationary or portable, for every air requirement from 25 to 10,000 c.f.m. for pressures up to 5,000 pounds.

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CHICAGO PNEUMATIC
TOOL GO COMPANY

General Offices: 8 East 44th Street, New York 17, N.Y.

本本本本本本本本 AIR COMPRESSORS VACUUM PUMPS DIESEL ENGINES AVIATION ACCESSORIES (Continued from page 80) provided he has good control and the confidence of his customers.

WILLIAM ELLIOTT, Department of Public Works, New York City, said that his organization has just adopted a policy of going back to standard portland cement in preference to air-entraining cements for postwar construction in order to be assured of good concrete construction.

Mr. Wuerpel went into considerable discussion of the meaning of the word "density" as it applies to con-

crete, to show that air-entrained concrete is not less dense than other concrete, when it is understood that the purpose of dense concrete always was to reduce permeability. He told of microscopic tests which proved that air voids in concrete made from air-entraining cement were not interconnected and do not contribute to the permeability of concrete or toward capillary channels. Further, the spheroid voids in entrained concrete were found by microscopic tests to be reservoirs to absorb the expansion of the water

that becomes present in concrete.

Mr. Wuerpel believes that one of the most important elements in the evolution toward the use of an airentraining agent at the mixer is the development of an accurate dispensing device to assure that the amount of agent to be added may be regulated. In rebuttal to Mr. Elliott, he said that the percentage of air entrained in concrete can be controlled by use of the unit weight test at the mixer or at the point of deposit. The amount of air can definitely be determined by adding the air-entraining agent at 'the mixer, he said. In discussing the influence of the time of mixing on air entrainment, Mr. Wuerpel said that with the regulation type of tilting drum mixer, using neutralized vinsol resin, the air-entrainment - whatever it is - takes place within one and one-half or two minutes. After that, according to his studies, it gradually reduces with mixing time. Insofar as transit mixes are concerned, he said that difficulties have come in attempting to place 11/2- and 2-in. slump concrete in them. In his opinion, there is an enfolding action which tends to enfold a large amount of air into the concrete even before the desired homogeneity of the mix has been reached.

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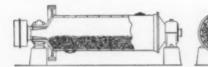
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Mr. Walker brought up the question of the transportation of concrete in non-agitating equipment and considerable discussion developed. J. F. McCracken, Louisville, Ky., said that it did not take many loads in dump trucks to convince him that it was not commercially practicable. Loads were hauled up to 45 minutes and, the longer the haul, the greater the segregation and the difficulty in handling. Others told of their experience and the consesus of the discussion was that this practice is only practicable for very short hauls, with concretes of certain consistencies and in dump bodies with controllable discharge gates. Segregation is evidently a serious drawback to that type of haul, as emphasized by Alexander Foster.

In reply to a question by Joe Dixey, New York City, Mr. Wuerpel said that simple neutralized vinsol resin could be added to the mixing water where it is necessary to add mixing water into revolving drums at the jobsite. Other admixtures might have to be added into the batch. In reply to another question, as to the migration of air in high columns, and the efficacy of using concrete with four or five percent of air in the placement of reinforced concrete columns, Mr. Wuerpel said that there is no migration.

In conclusion, he said that airentraining cements would be desirable for plasticity alone, even if that was the only property gained; and

(Continued on page 84)



FINE GRINDING

Hardinge Tube Mills are available in single, two, three and four compartments in the cylindrical or tricone design.

The heads are conical and are provided with large diameter main bearings, water cooled for dry grinding. The shell is of welded construction.

For dry grinding the Mill can be in closed circuit with the Hardinge Reversed-Current Air Classifier. The "Electric-Ear" sound control unit for controlling the feed rate can be applied to either wet or dry grinding Ball or Pebble Tube Mills.

For Complete Specifications Write for Bulletin 18-A.

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Model H Cummins Diesel is offered in both four and six-cylinder arrangements, developing maximum output of 100 and 150 hp., respectively. This engine is manufactured in a complete line of industrial and automotive models, such as the Model HP-600 power unit, shown above, and Model HBI-600, right, for wheel or track-mounted equipment.



The Model HIP-600 is an open type power unit incorporating the same basic engine as that described above. It has a $4\frac{7}{8}$ " bore and 6" stroke, the six-cylinder unit having a piston displacement of 672 cu. in., and the four-cylinder, 448 cu. in.



The Model HGA-601 is an AC generating set, rated 50 kw. at 1200 rpm. The four-cylinder Model H generating set is rated 30 kw. at 1200 rpm. Both four and six-cylinder sets are also available for DC operations.



A look at the Cummins Diesel's long record of profitable performance in all types of heavy-duty earth moving and material handling equipment proves that—in the construction and aggregates industries—one diesel does the complete job! In trucks, shovels, compressors, rock crushers, dredges and virtually every other type of equipment—rugged, flexible, economical Cummins Diesel power has consistently demonstrated its ability to get the job done in less time . . . at a lower cost. Cummins Engine Company, Inc., Columbus, Indiana.





DURABLE STREAMLINED ECONOMICAL

 Users everywhere are realizing the many profitable advantages of the Johnson Clamshell Bucket, the bucket that combines clean, fast digging with full protection against wear.

All-welded construction eliminates rivets, bolts, and other impeding projections, assuring best balance and better digging quality in all kinds of material.

Renewable lip edge-bar of tough manganese steel combats wear and is easily replaceable in the field.

Needle-bearing mounted closing sheaves permit free-running cable action at all times, bearings are sealed against entrance of dirt and moisture.

Lower sheaves are fully protected by heavy rugged steel plates. All sheaves have large diameter for increased cable life.

General purpose type, 1/2 to 1-1/2 yards capacity in stock for immediate delivery.



Johnson Clamshell Bucket showing manganese steel teeth designed for smooth speedy digging.

Write today for full information.

The C. S. Johnson
Company
Champaign, Illinois

(Continued from page 82)

said that the U. S. Engineers are now considering the use of air-entraining agents in dam construction for low cement factor concrete. Scaling and normal durability are not problems in that type of construction, but greater plasticity is desired where three-bag concrete with 6-in. and 7-in. aggregate is used.

Merchandising

ROBERT C. COLLINS, chairman of the committee on merchandising, reported on plans formulated during 1944 to improve merchandising methods for ready-mixed concrete. The committee has made a study of contract forms in use and found that a large number of producers have no contract forms. Mr. Collins believes the industry should be concerned with the lack of protective clauses in many of the contracts in use.

Desired protective clauses, in the opinion of the committee, would require that adequate roadways be provided at jobsites, specify permissible maximum waiting time, provide adjustment for less than full-load deliveries, cover charges for admixtures and special cements and require set delivery time for concrete.

Protection Form

In the discussion that followed, ROBERT F. PORTER, Harry T. Campbell Sons' Corp., Towson, Md., described a 4- x 8-in. instruction card which drivers have small purchasers sign when making deliveries. The card is reproduced herewith. Robert Collins, in commenting on the fact that most producers will deliver at any time for the same price, according to the contracts he has seen, cautioned that unreasonable demands will be made in the postwar years in attempting to rush projects to completion.

Glass Sand Flotation

(Continued from page 61)

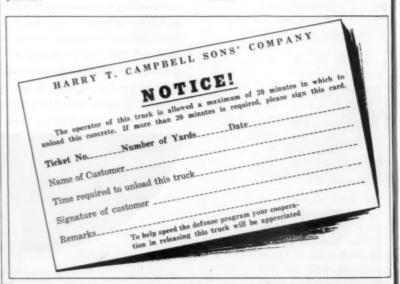
As can be seen in the sketch on page 58, the formation at this plant occurs in two layers shaped as a syncline. The upper layer is of a buff color and contains the limonite impurity (about 60 percent iron). The lower layer is of a blue color and contains the iron pyrites (about 47 percent iron). The iron oxide in the upper layer occurs in small concretions, or grains of sand cemented together with the iron oxide. A small amount of silt and clay is associated with both layers, roughly, approximating 4½ percent. While this clay contains a small amount of iron, practically all of it can be removed with the clay in preliminary wash-

The Mid-Continent Glass Sand Co. worked pit No. 1, as shown in the sketch, until 1941 when available sand was exhausted. The company then worked pit No. 2 for two years, but since the entire excavation was in the lower layer, this pit was abandoned in 1943. From then until the present writing, pit No. 3, where there is about a 30-ft. layer of the top deposit, has been used.

The Mid-Continent Glass Sand Co., in operation since 1913, is located at Roff, Okla., which is about 15 miles south of Ada. E. C. Larsh and Kenneth P. Larsh are managing partners and D. L. Larsh is secretary and treasurer of this company.

Fire at Ready Mix Plant

W. E. Anderson & Sons Mixed Concrete Co., Columbus, Ohio, recently suffered a fire loss estimated at \$3500 when two sections of its building were destroyed. Some damage was caused to three mixer truck units.



Card used by Harry T. Campbell Sons' Corporation, when making deliveries to private customers and small contractors, for protection against excessive unloading time

page 61) ch on this ped as s of a monite iron) or and out 47 in the oncreed tosmall ciated proxiis clay iron. moved washnd Co. in the ailable mpany years,

Production Up 20% Cost Down 20%



Here is a typical example of what takes place when a quarry changes over to the Dempster-Dumpster system of hauling material.

In the operation illustrated above — a large western limestone quarry—the method of hauling was changed from track and cars to a Dempster-Dumpster Unit and a number of detachable bodies. Although bodies are loaded by mechanical shovel, production has been increased 20% and costs of production reduced 20%. Where hand loading is the method used in loading the detachable bodies, production and savings are usually greater.

No amount of words can explain how simply and easily the Dempster-Dumpster can make such savings possible. But to see it in operation is all that is necessary to convince you that once put in operation, increased production and great reduction in cost are sure.

When one Dempster-Dumpster and a number of bodies can do the work of 3 to 5 conventional trucks, big savings in gas, tires, trucks and manpower are sure. Write for complete information. Dempster Brothers, Inc., 35 Springdale, Knoxville, Tenn., U. S. A.



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Crushed Stone Convention

(Continued from page 69)

administrative director of the National Crushed Stone Association and secretary of the Manufacturers' Division, expressed the appreciation of the Association for the manufacturers contribution of over \$3000 the past year. The money was raised to replace funds lost through cancellation of the annual exposition for the duration of the war.

The officers were re-elected. In addition to Mr. Nice and Mr. Boyd, the following vice-chairmen were re-elected: J. C. Farrell, Easton Carand Construction Co., Easton, Penn.;

R. C. Johnson, Simplicity Engineering Co., Durand, Mich.; J. Craig Mc-Lanahan, McLanahan and Stone Corp., Hollidaysburg, Penn.; L. C. Mosley, Marion Steam Shovel Co., Marion, Ohio; C. H. Roberts, Traylor Engineering and Manufacturing Co., Allentown, Penn.; and J. B. Terbell, American Manganese Steel Division, The American Brake Shoe Co., New York, N. Y. Milo A. Nice, J. Harper Fulkerson, Cross Engineering Co., Carbondale, Penn., and L. W. Shugg, General Electric Co., Schenectady, N. Y., will continue to represent the Manufacturers' Division on the board of directors of the National Crushed Stone Association.

BUYING A TRUCK MIXER?

"How Facts Help Sales"

A. T. GOLDBECK read a paper en-

titled "How Facts Help Sales," which dealt with the necessity of crushed stone salesmen knowing their product from all angles, to promote sales He said: "It would seem to be almost axiomatic that any salesman should have as wide a knowledge of his product as possible. Applied to the crushed stone salesman, this means that he should know the characteristics and properties of crushed stone; how these are tested; what the tests signify: how his particular stone, because of its special properties can best be used; how these properties influence the proportions of concrete or bituminous mixtures in which it is used in combination with other materials."

Post-War Construction

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J. A. Rigg of the Acme Limestone Co., Fort Spring, W. Va., introduced Maj. Gen. Philip B. Fleming, Administrator, Federal Works Agency, at the Monday afternoon session, who read his paper entitled "Postwar Construction Program."

Gen. Fleming dwelt on the importance of the road builders and the large part that they have played in the development of the automotive industry. He stated that without the advances made in road building, the automobile would not be perfected to the degree that it now is, since good roads made automobile ownership feasible, which in turn laid the groundwork for mass production.

Gen. Fleming stated that the new Federal-Aid Highway Legislation will allow us to expect about a billion dollars worth of road and street construction, with the Federal and State governments sharing costs on a fifty-fifty basis. This will include a true interstate highway network, elimination of urban traffic bottlenecks, construction of local and secondary roads, and a new formula for gradecrossing elimination.



If you are planning a new truck mixer now or later... you'll want to investigate the special features that a Rex Moto-Mixer offers you.

You'll want to know about the exclusive Rex Chain Belt Drive that "cushions" road shock and protects the transmission, power plant and other vital working parts of a Rex Moto-Mixer.

You'll want to know about the Hi-Lo mixing action that makes mixing faster and more efficient—the patented method of water entry that introduces water behind the blades, right where the actual mixing takes place—the special Rex

Water System that allows water to be drawn off in any quantity desired, on all sizes of mixers—and the unrestricted discharge for all slump concrete.

Rex Hi-Discharge Moto-Mixers have been consistently improved, but the basic design has remained unchanged because it was right—from the start.

For complete information see your Rex Distributor or write Chain Belt Company, 1649 West Bruce St., Milwaukee 4, Wisconsin.

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R. C. Smith, Liberty Limestone Corporation

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John O. Brennan, Orange Quarry Co.

Gen. Fleming said, "What I have advocated, before Congressional committees and elsewhere, is a potential of at least five billion dollars' worth of public works construction in the first post-war year." He arrived at this figure by mentioning that "normally, all construction, public and private, accounts for about ten percent of the total annual national income. If we are to have a total annual national income hereafter of at least 150 billion dollars-which is the figure frequently mentioned as that necessary to assure something like full employment—construction should account for ten percent of it, or 15 billion dollars a year. And since public construction on the average accounts for a third of the whole construction volume, the share of Government-Federal, State, and localcomes to a round five billion."

Airport Construction

WILLIAM A. M. BURDEN, Assistant Secretary of Commerce, was the second speaker on the Monday afternoon session. His talk was entitled "A National Program for Airport Construction." He stated that aviation, in the years ahead, will assume a position beside rail, water and road systems as an accepted form of transportation. That the need for airports is important is recognized by the fact that the House of Representatives asked the Department of Commerce to prepare through the C.A.A., a report on the needs for airports in postwar aviation. This report has been submitted. While Federal aid is not available at present, the C.A.A. is ready to render consulting advice on airport planning, site selection, and operational and management problems. Federal aid, however, depends on future action by Congress in passing necessary legislation and appropriations for airport development.

Mr. Burden mentioned several points included in the report to Congress, some of which are: The pres-

"Window" Shows When to Reverse or Replace Hammer Heads

The Amsco-Clark renewabletip pulverizer hammer (Patent applied for) has a number of features that promote economical operation in both

large mills and small.

First, and inevitably, because no adequate substitute has been found, it is made of austenitic manganese steel, "the toughest steel known" which retains its shock-resisting toughness while the characteristic surface workhardening takes place; factors that preclude breakage and rapid wear.

Then, not only is the head or tip of this hammer renewable, but it is also reversible end for end, which assures double wearing life. About 75% of the tip metal can be used, while the duplex shank, of comparable weight, will outlast a lot of tips.

The "windows" or holes in the tip sides show the operator

the limit of tip wear before the shank hooks are attacked and, incidentally, also reduce the weight of the head.

Other advantages:

The tip new or worn cannot come off the shank as long as the latter hangs on its supporting rotor pin, regardless of the assembly bolt.

But the tip is easily unhooked by spreading the shank halves apart after removing the assembly bolt; and a new head is quickly applied by reversing this operation. The assembly bolt

is firmly locked with a standard split cotter.

The same size tip can be used with longer or shorter shanks to accommodate varying mill designs.

Your price inquiries can be answered promptly if you will give the make of your pulverizer and the pattern number on your present hammers.

The features of Amsco Renewable Lip Dippers are covered in Bulletin 641-D.



CRIMARY PROPERTY, STATE OF CHILL DEL, DEMPER, COLO., CARLAND, CALE, SOS ANGRES, CALE, ST. SOURS, M.D.
OFFICES BY PERMICIPAL CRIES.

Airport Construction

ent system of airports is not adequate to serve the needs of aviation after the war, civilian aircraft in the country today number 25,000, while estimates show that there can be 400,000 civil planes in the U.S. within ten years of the war's end. He also stated that in order to serve aviation and make possible this expected growth, about 3000 new airports will have to be constructed and about 1600 of the existing 3000 will have to be improved. The estimated cost of the program is about one billion dollars. exclusive of land and airport buildings. Estimates show that an additional \$250,000,000 would be needed for the land and buildings.

Mr. Burden said that such a program could be spread over a five or ten year period with the Federal, State and local governments sharing the costs on a proportion to be established by Congress. The C.A.A. recommended to Congress that an appropriation not to exceed \$100,000,000 annually be made to develop a nationwide system of public airports to meet the future needs of aviation. It was also recommended that \$3,000,000 be made available immediately for preparatory work so that the construction program could be started as soon as appropriations are made. Mr. Burden said that after the war we will have a huge pool of potential pilots. There will be about 350,000 Army and Navy pilots and 150,000 civilian pilots and students. Also interested in flying will be two and a half million men trained by the armed forces in other aviation skills as well as an almost equal number of men and women employed in our aviation factories. All these, plus a quarter of a million students taking aviation courses in high schools makes a total of about 6,000,000 prospective flyers.

W.P.B. Ratings

The final paper of the Monday afternoon session, prepared by Dr. Marcellus H. Stow, deputy director, Mining Division, W.P.B., was read by Edward Bauman, field engineer for the National Crushed Stone Association. Mr. Stow was unable to attend the meeting due to travel difficulties.

In this paper, Dr. Stow stated, "During 1944, Order P-56 was amended five times, the latest and current amendment being on July 4. None of these amendments made any major changes in the policy or administration of the Order but were necessary to obtain conformity with over-all policies and procedures of the War Production Board.

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"It might be well at this point to review briefly the principal provisions of the current Order. The Order provides for the issuance of serial numbers to those mines and smelters throughout the United States and foreign countries that are of greatest importance in the war program. For those producers holding serial numbers the Order authorizes an endorsable AA-1 rating for maintenance, repair, and operating supplies and an S-7 allotment number for controlled materials. This rating and symbol can be used up to an amount not exceeding 120 percent of the aggregate expenditures for maintenance, repair, and operating supplies during the corresponding calendar quarter of 1943. Domestic producers not holding serial · numbers



E. V. Scott, Southwest Stone Co., left, chatting with E. W. Bauman

STRAYER PORTABLE CONCRETE PLANTS



Make 20 to 40 yards of specification concrete per hour on the job. One-man operation and a helper to

YARDS handle cement bags.

PER One hour to set up. Move from job to job. Write for booklet today.

ERIE NE COMPLETE LINE BUCKETS

Hundreds of
Erie Buckets are
shipped monthly for war uses.
Straight line
bucket production experi-

ence means better buckets for post-war and fast delivery. Investigate the complete Erie line now.

ERIE STEEL CONSTRUCTION CO.

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Aggre Meters . Buckets . Concrete Plants . Traveling Cranes

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Henry A. Huschke, formerly with National Lime Association, and now with O. P. A., Washington, D. C.

re permitted to endorse an AA-5 ating and an S-7 allotment symbol or maintenance, repair, and operatng supplies and controlled materials. If the AA-5 rating is not sufficiently high, non-serialized producers may apply to the Mining Division for higher rating. In addition to the rocedure for obtaining MRO items, a procedure is provided for obtaining items of capital equipment. The form be used for applying for capital quipment is known as WPB-1319; his form is used for obtaining most tems of machinery but to obtain priprity ratings for certain special items ome other form may be required. WPB-1319 Instruction Manual s issued bi-monthly and gives upo-date details concerning the number of forms to be filed and other pertinent information."

Dr. Stow said that military requirements of several items such as power shovels, tractors, trucks, and tires would be very great. Thus there would be very few of these items available for civilian use. He stated that the truck program is divided nto two parts, the off-highway and on-highway. The Division has been allocated a specific number of off-highway trucks for 1945. Application for both off- and on-highway trucks must be made on form ODT-663 and filed with the Local Allocation Office of that agency.

The five classifications of truck ires were discussed. Dr. Stow menioned in his paper that the Mining Division attempted to obtain a Group classification for trucks used in all phases of the mining industry but that due to the extreme shortage of tires, only specific types of mining perations could be placed in this ategory. Trucks used in the production of foundry sands and flux stone for steel mills were put in Group 1, were trucks used in the production of coal and certain minerals. Trucks used in all other mining operations were placed in Group 3.

(Continued on page 90)

CARVER PUMPS

Unsurpassed for Performance

• Carver Pumps stay on the job at top capacity even after hundreds of hours of hard service because of their simplicity, trouble-proof design and superior construction. Simplicity means fewer part to require attention. The recirculation tube is seen-tifically designed to provide fastest priming, peak efficiency, and correct amount of recirculation to keep priming chamber free from clooding deposits of silt, sand or dirt. Lifetime seal, special long-life impeller and renewable liner assure minimum of maintenance. Carver Certified Pumps are available in sizes from 1½" to 10" with capacities from 3,000 to 200,000 gallons per hour. For details, see your Carver distributor or write.

THE CARVER PUMP CO. Muscatine, Iowa



CARVER CENTRIFICAL Certified PUMPS

Operating Problems

(Continued from page 89)

T C. COOKE, president, The Lynn Sand and Stone Co., Swamp-scott, Mass., and Nelson Severing-haus, general manager, Consolidated Quarries Corp., Decatur, Ga., were co-chairmen of the Tuesday afternoon session for operating men and equipment manufacturers.

This session was one of the most outstanding of the convention. There was lively participation in the discussion by quarry operators as well as equipment manufacturers and the general impression was that many cost-saving ideas were forthcoming.

The chairmen had a list of scheduled subjects which had been suggested in advance of the meeting by operating men.

Blasting

Mr. Severinghaus started the meeting off, appropriately, by asking for suggestions as to how operating men can minimize the annoyance from blasting, which probably causes more complaints than actual damage from blasting. The morning general session had dealt with the legal aspects in connection with damage suits.

L. F. MILLER, New York Trap Rock

Corp., Newburgh, N. Y., described an experiment he had made to determine if covering primacord would reduce the noise factor. The result of the test were so startling that the practice now is to always cover up primacord that lies on top of the ground, in the trunkline method of firing, with screenings.

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DR. DON LEET: Harvard University said that a great deal of discussion has been directed at ground-born vibrations, which do not cause damage actually, but that little has been said about air-borne vibrations which are the annoyance that results in serious complaints. Some o the psychological factors should b taken into very serious account in blasting operations as well as seismo. logical factors, he emphasized. In concluding his remarks, he said that the blasting problem has not been really solved by establishing that damage is not caused by groundborne vibration. The annoyance factor must be reduced and can be often by relatively minor changes in operation. Subsequent discussion de veloped that changing of blasting practices so that smaller charges are required would tend in the right direction.

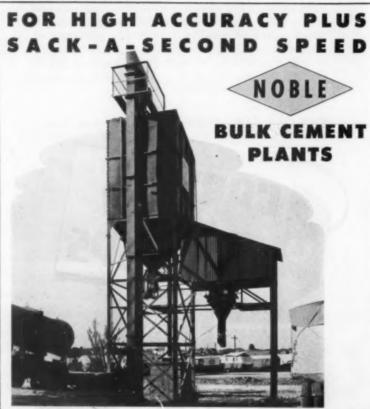
IRVING WARNER, Warner Co., Philadelphia, asked if there was any way possible to shoot deep well holes, is rapid sequence to distribute the shod impact. Milo A. Nice, Hercules Powder Co., said it was possible but that the spacing of drill holes would have to be altered, otherwise one hole might, when it is shot, remove considerable of the burden in front of the next hole and, when the second hole is shot, stone might be thrown great distances. According to Mr. Nice, such delayed shooting with delay caps would be practicable in a confined, completely enclosed area.

Stripping

J. A. Rigg, Acme Limestone Co. Fort Spring, W. Va., was asked to start discussion on stripping by describing his experience with hydrau-



Floyd W. Mumme, Columbia Quarry Co.



 BATCHING CEMENT at sack-a-second speed with accuracy of one-half of 1%, Noble Bulk Cement Plants are saving time, manpower and material for many leading contractors and ready-mix operators.

• NOBLE PLANTS are available in two readily-portable types. The Speed Plant (illustrated above) operates continuously at exceptionally high speed. The Distribution Plant, available with up to eight silos, permits storage of several different types or brands of cement and batches from any silo at the touch of a lever.

Write or wire for complete information.

NOBLE CO. 1860 SEVENTH STREET - OAKLAND 7. CALIFORNIA AUTOMATIC SCALES * AGGREGATE BATCHING PLANTS * ELEVATORS CONVEYORS * BINS * SILOS * TUNNEL FORMS * "PRESS-WELD" PLACERS eribed are of deterded would be result that the cover up of the ethod of

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lic stripping. Mr. Riggs' company has been stripping hydraulically for many years and the results of study of his methods by Mark Shepherd of the Bureau of Mines were prepared as a paper for presentation before the American Institute of Mining and Metallurgical Engineers. Mr. Rigg said the report published in October, 1937. might still be available.

The practicability of hydraulic stripping is very limited, he said; and should not be undertaken unless certain conditions demand. At Fort Spring, the terrain is a side-hill development with a sloping top thoroughly channeled by erosion which could not be stripped by ordinary methods. There must be an ample supply of water and ready means of disposal, he emphasized. An elaborate setup is required that necessitates large-scale removal. Cost of overburden removal in this operation has been calculated at something like \$1.16 per cu. yd.

In reply to a question asked by R. C. Smith, Liberty Limestone Corp., Buchanan, Va., as to how materials between potholes might be blasted to gain a level surface for shovel shooting, Bruce S. Campbell, H. T. Campbell Sons Corp., Towson, Md., said that the vertical stone, with sand and clay is removed and processed into crusher run material at his Texas, Md., plant, which is sold as such for fill, for railroad washouts, etc.

In reply to a question as to whether any producers present were using LeTourneau equipment, Mr. Campbell said that contractors using such equipment were bidding it at 18 or 19c per cu. yd. before the war. W. D. MANCHESTER, Lynn Sand and Stone Co., Swampscott, Mass., described the use of back-hoes in stripping. With the backhoe, overburden at his quarry is removed from as much as 12 ft. below grade. Mr. Manchester said that one of the main advantages is that the shovel is always on top, on the stripping, permitting very clean stripping.

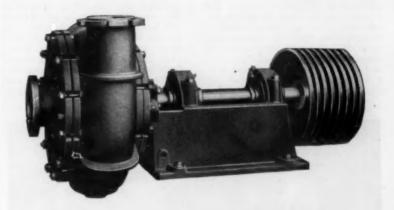
Feeding Crushers

D. E. Hamlett, Virginian Limestone Corp., Ripplemead, Va., was asked to lead the discussion on feeding stone into primary crushers. Mr. Hamlett uses a 5- x 12-ft. continuous chain feeder, with uniform control of feed of rock up to seven or eight tons into a 48- x 60-in. jaw crusher. A 5-ton air hoist is provided above the feeder and one at the crusher. He said that at least a foot of stone is left on the feeder to cushion the impact. The principal maintenance item is replacement of 6-ft. roller shafts under the feeder.

W. B. Bobbitt, Radford Limestone Co., Radford, Va., said that he had seen a large electric pan feeder handling two-ton stones very successfully in an Ohio plant. He described the feeder as about 5 ft. wide and 6 ft. long, with fingers on the end of

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Centrifugal MATERIAL-HANDLING PUMPS

It's as difficult to put your finger on the exact reasons for exceptional "life expectancy" in a pump as it is in a man. But basically the fundamental structure must be sound . . . and well-adapted to the environment. Overstrain must be avoided.

That's why Morris pumps feature larger shafts, larger and better-sealed bearings, more ample stuffing boxes, and heavier cast sections. To avoid excessive strain, wear and vibration, Morris pumps are designed to give top efficiency at moderate speeds. Flow through the pump—even of heavy slurries and highly viscous fluids—is smooth and constant, assuring uniform loading of the impeller and balanced radial forces acting on the shaft. Shaft deflection is negligible and packing wear is substantially reduced.

More Output With Less Power and Maintenance

Owners are usually amazed at the sustained efficiency, and at the lower power, labor and maintenance costs when figured on a year-in, year-out basis. The accurate dynamic balance of all rotating parts—the smooth, vibration-free operation—and the outstanding wearability of all parts—give maximum value for the dollars invested. Write today for Bulletin.

MORRIS MACHINE WORKS
Boldwinsville, N. Y.

Branch Offices in Principal Cities



CENTRIFUGAL PUMPS

Operating Problems

(Continued from page 91)

the feeder that carried the large stone into a jaw crusher and allowed the fines to bypass the crusher on to a belt conveyor.

L. F. MILLER asked for suggestions on how to break jams in crushers, particularly on how to remove rock to save the 10, 15 or 20-minute delays that are so common due to bridging. He uses the conventional hook. Mr. Rigg said that he cut the shovel bucket size from 2½-cu. yd. to 2-cu. yd. for accommodating a 48-x 46-in. jaw crusher. Several producers mentioned the use of iron

wedges and pins for deep cribs. Mr. Campbell took the opposite stand to Mr. Rigg, saying that as far as he is concerned he has never seen a big enough shovel in the quarry—it does not deliver enough rock.

Drop Balls

One of the most interesting topics discussed was the use of drop balls, for secondary breakage, particularly now that there is a serious shortage of men willing to operate jackhammers. Fred Edwards, New Haven Trap Rock Co., New Haven, Conn., described the successful experience in the use of drop balls on trap rock at Plainville, Conn., in place of jack-

hammers and blasting. The drop ball requires a crane, a steel ball and an experienced operator. Stone up to 10 cu. ft. in size has been broken successfully in this quarry, but Mr. Edwards said the size that can be broken depends upon the nature of the stone.

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For a quarry capacity of 100,000 to 200,000 tons yearly, Mr. Edwards uses a 5000 lb. forged steel ball, and a 1¼-cu. yd. crane with a 50-ft. boom. The ball is pear shaped. Assuming that the crane and ball are equivalent to the compressor, jack hammers, drill steel, pipelines and hose, the average cost by the drop ball method for 1600 tons per day is \$7.00 as compared to \$56.19 by drilling and blasting, according to Mr. Edwards.

The forged steel ball is of 30-40 carbon steel, preferably, air-treated and rough turned, he said. The loss in metal was about 1800 lb. on a 5000 lb. ball for shipments of 750,000 tons of stone.

Discussion developed that stone slabs are easiest to break with a ball. Mr. Cooke uses a 5800 lb. ball which wears to a degree, on abrasive stone, as to require a new ball each year. He does not permit sidesweep, since the crane boom was broken twice in a year as a result of this practice.

In commenting on lead base versus tin base babbitt, M. E. McLean, East St. Louis Stone Co., East St. Louis, Ill., told of a disastrous experience with a lead base babbitt. He told of placing the babbitt in a gyratory reduction crusher. It lasted less than 48 hr., melted and froze to the shaft. Tin base babbitt put in to replace it has been running over a year with no trouble.

Experience with methods of elevating stone from the quarry to the primary crusher was another subject discussed informally. Melvin C. Dow, New York Trap Rock Corp., Newburgh, N. Y., who has had considerable experience with semi-trailer truck haulage up steep grades with the aid of barney cars, was asked to



E. Stanley Storey, North American Cement Corporation



Plat-O Vibrating Screens are built for the tough grading jobs . . . for constant hard usage, day in and day out . . . built for the long pull. You can see strength and endurance in every feature of design and construction . . . in the sturdy, all-welded construction of their heavy steel framework and sides . . . in their over-size bolts and drive shaft . . . in the simplicity of their two-bearing (oversize) design . . . in their many outstanding features.

That's why more and more aggregates producers are choosing Plat-O to handle their tough jobs . . . getting better sixing—cheaper from Plat-O Vibrating Screens. For your operations, select from a complete line of one, two, three and four-deck models ranging in size (actual screening area) from 2½'x4' to 5'x12'.

DEISTER MACHINE COMPANY

Fort Wayne 4, Indiana



lead the discussion. He said that the selection of methods is purely a problem of economics—whether it is desired to lower the crusher and install a conveying system with a high capital cost and pay for it over many years, or to install a low cost system with higher operating costs.

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Mr. Bobbitt told of his experience in taking out 1,000,000 tons of stone from a depth 50 ft. below the main quarry floor level, with 8-cu. yd. trucks up a 15 percent grade. He found that it takes double the gasoline to operate ten hours continuously up and out from the lower level as compared to consumption on the level.

Prevention of segregation in stockpiling, a time-honored problem of the industry, came up for discussion. Mr. Severinghaus never attempts to stockpile a wide range of size stone. He follows a practice of stockpiling closely-sized stone; for example, a 2- to 21/2-in. stone or one 11/2-in. to 1-in. in size. At his plant, stone is dumped into rather high piles from conveyors. R. C. SMITH told of stockpiling 50,000 tons of $3\frac{1}{4}$ to $3\frac{1}{2}$ in. base stone in 4-ft. lifts. In his experience, the little segregation occurring in each lift will be minimized by the mixing action in loading the stone from the bottom with power shovels

Simplified Practice Recommendations

ENGINEERING DIRECTOR A. T. GOLD-BECK discussed the present status of the Simplified Practice Recommendation specification and requested floor discussion as to the suitability of the size tolerance from the standpoint of production. IRVING WARNER, who has studied the problem probably more than any other producer, told in detail why, in his opinion, the specification is impracticable. His main point was that a single screen could not make the division to meet the specifications, between the material that comes off the top of the screen and the material that passes the screen. E. V. Scott, Southwest Stone Co., backed Mr. Warner up. He has used two screens but could not get any production.

Signal Systems

Various types of signal systems used in plants, that aid efficiency and provide greater safety were discussed. Mr. Severinghaus is using air horns operated on a 110-volt a.c. circuit, which he has found reliable in operation.

Drilling Methods

Mr. Severinghaus was asked to tell of his experiences in drilling blast holes. After considerable experimentation, with 6½-in. holes in granite, he found that the best breakage came with a hole spacing of 35 ft. with only a 16-ft. burden. The holes are 150 ft. deep. Originally holes were spaced 18 ft. apart with a 20-ft. burden.

(Continued on page 94)



Effectively Removes Waterlogged Wood and Blue Clay from 200 Yds. of Gravel Per Day

An Illinois operator has this to say regarding their Eagle 18" Screw Type Gravel Washer. "This machine is giving extremely satisfactory service. We wash about 200 yds. of gravel per day and are very effectively removing chunks of blue clay and waterlogged wood with it. While we are feeding this washer with gravel which is much too small, yet it is doing an excellent job of cleaning."

Complete details in Bulletin 44. Send for a copy today!

Send for Catalog No. 44 for complete details on Eagle Classifying and Dewatering Equipment.



Portable Stock Pile Rewashers, Too!

Eagle Portable Stock Pile Rewashers are a definite aid to premium sand and gravel producers who desire a final washing of sized stock pile materials prior to shipping. Supplied complete with bin, screw washer, tank and loading chutes, they produce a large volume of high quality material. Details of existing plants or special designs to suit your specifications gladly supplied on application.

EAGLE IRON WORKS

137 Holcomb Avenue Des Moines, Iowa

EAGLE Specialized Sand and Gravel Equipment
"SWINTER" DREDGE LADDERS — SCREW WASHERS
LOG WASHERS — DEHYDRATORS — SAND TANKS
CLASSIFIERS — REVOLVING SCREENS

EAGLE IRON WORKS
DES MOINES, 10WA

SERVING INDUSTRY FOR OVER SEVENTY YEARS"

Management Problems

(Continued from page 93)

THE FINAL SESSION of the National Crushed Stone Association convention on Wednesday afternoon, January 31, was presided over by H. E. RAINER, manager, Federal Crushed Stone Corp., Buffalo, N. Y. Only two papers were on the program: (1) "Stabilization Problems of the Construction Industry," by MILES COLEAN, consultant on construction to the National Planning Association, Washington, D. C.; and (2) "Management H. HILL, vice-president, Allis-Chal-

mers Manufacturing Co., Milwaukee, Wis.

Mr. Colean described his paper as some of the high spots in the coming report of the National Planning Association. The chief points he endeavored to make were (1) that construction should not be used to balance economic activity, but (2) if the construction industry itself were stabilized it would go a long way toward bringing about stabilization of our entire economy. Such stabilization must not mean a dead level of activity, but one that would rise as

the economy as a whole would grow. The measure of the volume of construction should be in terms that allow for fluctuations in dollar volume—in terms of employment for example.

The demand for construction, Mr. Colean said, never has been stabilized, and future provision must be made for abnormal periods. It will be impossible to develop all at once a formula for stabilization, and it is best if we concern ourselves immediately only with the period of the next ten years. We can set up a formula for this, Mr. Colean thought, with a fair degree of safety, raising or lowering our limits as necessary. Estimates along these lines show that about 11 percent of our national income should be spent for new construction, or, including repairs and maintenance, 15 percent.

Labor Management

Mr. Hill dealt mainly with one specific phase of industrial relationsthe relation of employees to good management—and here one should not confuse labor union relations with employee relations. Union labor relationships of management are actually only a small part of labor relationships. Handling of the employee in the plant, assignment to job, instructions, introduction to his job by his boss, etc., except in the case of closed shop contracts, are purely individual employee-company relationships, and only when the union employee with a grievance appeals to his shop steward does "in-dustrial relations" become "labor relations."

The key of healthful employee relationship rests largely with the foremen; where these fundamental good relations do not exist many things can go wrong and many alibis found. "None of these can destroy a sound employer - employee relationship if management itself is united, alert, sound and enlightened." Management, Mr. Hill said, can not claim all the brains, but it should know where to put its hands on brains. Every representative of management must put the welfare of his company above everything else; and management must be unified, which means that it must back up its supervisor and make his mistakes its own mistakes.

Mr. Hill said there must be a clearcut company policy and it must be known to all who supervise. There usually is no conflict between doing the right thing and company policy. There is nothing in company policy requiring a superior to be rude or harsh. Leadership and not driving force are what conditions call for. Decisions of management must be based on facts and sound judgment and not merely on a loud voice. Encouraging suggestions from employees and handling them correctly are important.

(Reports continued on page 122)



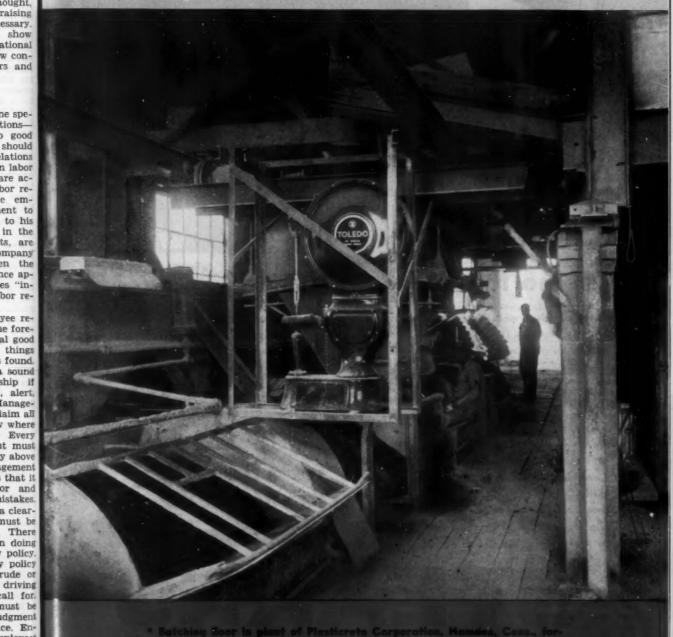
The first 25-cubic-yard dragline bucket is a Page Automatic owned by the Northern Illinois Coal Corporation. It is shown at work, and below after its non-stop run of 7½ million cubic yards when it was sent to the yard for its first reconditioning.

SAME PAGE AUTOMATIC AFTER 7½ MILLION CUBIC YARDS OF STRENUOUS WORKOUT

PAGE ENGINEERING COMPANY-CHICAGO 38, ILLINOIS

ROCK PRODUCTS' CONCRETE PRODUCTS and Cement Products

MARCH 1945



merly known as Hamden Building Tile Co. Two grades of ciadors are weighed

by a scale calibrated to 25-lb. accuracy, and a separate weigh beam with scale, accurate to 1-lb. graduations, proportions coment into the hopper

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 Second "E" flag star awarded
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STEARNS MIXERS



Memo for Buyers!

- Hundreds of modern concrete products plants are using from one (1) to as many as eighteen (18) Stearns batch mixers.
- They continue to buy them, continue to swear by them because Stearns machines do a better mixing job with less man-power and at comparably lower maintenance costs.
- Advantages include lowest charging height—Conveniently located door control—Handy bag shelf—Quickly shifted, removable, wear-resisting liner bars—"Sterloy" mixing blades—Bearings: self-aligning, anti-friction—Drums of steel plate welded to heavy heads. Supplied in 12, 18, 28, 42 and

50 cu. ft. capacities with pulley, V-belt or Gearhead motor drive. of cre

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New Mixer folder mailed upon request. Tell
us the capacity you need and we'll gladly refer
you to Stearns-equipped plants located within convenient visiting distance.



STATES AND S

GENE OLSEN, PRESIDENT

Designers and manufacturers of vibration and tamp type block and brick machines . . . Mixers . . . Skip Loaders.

Licensed under the basic Gelbram Vibration Patents.

Concrete Pipe

Machine-Compacted SEMI-DRY CONCRETE

By M. W. LOVING*

N April, 1917, Duff A. Abrams† published a diagram, Fig. 1, which made it possible for many of us to visualize, for the first time, the importance of controlling the amount of water that should be used in concrete mixtures. Until the vibrocast process was generally adopted, beginning in 1928, it was not always practicable or economically feasible to use concrete mixtures with slumps much greater than 5 to 6 in. Then. too, the engineers and other users demanded smooth and even surface textures and were content with concrete of low, initial compressive strengths ranging from 2000 to 3000 p.s.i. The same engineers would frequently reject concrete of high initial strength, made with drier concrete mixtures because of defects in surface texture - commonly called honeycombing - that could not be avoided unless the concrete was laboriously tamped and hand spaded.

It was generally known, too, that concrete made with plastic concrete mixtures, of low initial strength, increased in strength with age (see quotation by Prof. Abrams). But in

†Formerly Prof. Structural Materials Research Laboratory, Lewis Institute, Chicago, Ill.



Fig. 3: A mold is shown at the left, and in the center of the picture at the top, is a view of the core that has been removed; while two workmen transport the pipe, in its mold, to the curing room

many cases this kind of concrete failed under normal service conditions because of its low strength and permeability; whereas dense, high strength concrete would and has given excellent service under iden-



Fig. 2: Universal tamping machine

tical conditions because it was impermeable. It will be seen, Fig. 1, that for plastic concrete mixtures it is desirable to use the minimum amount of mixing water to obtain maximum strength.

Conversely with semi-dry concrete mixtures the maximum amount of mixing water must be used, limited only by the ability to remove the molds immediately after the concrete units are machine compacted. From Fig. 1. it will be seen that the strength of concrete falls off very rapidly, when and if an insufficient quantity of mixing water is used, because the cement may not be properly hydrated. About 3.5 gal. of mixing water per sack of cement, is required to produce concrete of maximum strength and at the same time assure proper hydration of the cement. If the cement is not properly hydrated the concrete may disintegrate under normal service conditions. Because this very important point was neglected or not fully understood by concrete products manu-

*Consulting engineer.

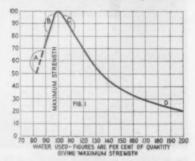


Fig. 1: Graph illustrating effect of mixing water an strength of concrete. (A) Insufficient amount of mixing water to hydrate cement. (B) Semi-dry consistency for machine-compacted concrete of high strength and durability. (C) Plastic consistency for concrete of high strength and durability. (D) With the "slappy" concrete mixtures 66 to 70 percent of the possible strength of the concrete is lost

facturers, engineers often refused to specify concrete products made of semi-dry concrete mixtures for the reason that they failed so often under normal service conditions that no confidence was placed in the products so made or the manufacturers.

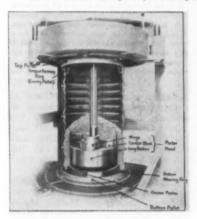
Rigid specifications for concrete pipe, first adopted in 1920 by the American Society for Testing Materials, forced manufacturers to make concrete pipe properly. Particularly was this so when highway departments, city officials and other political subdivisions required all pipe to meet the tests and other requirements set up in the A.S.T.M. specifications. To meet the tests, in the case of concrete sewer pipe, the manufacturer must use a concrete mixture of not less than 1 volume of cement to 4 volumes of combined fine and coarse aggregates. The semi-dry concrete mixture must be dry mixed for two or more minutes to assure uniform dispersion of the cement throughout the batch. The correct amount of mixing water-about 3.5 gal. per sack of cement, is then added and the batch mixed for at least two and preferably three minutes. Such a concrete mixture, when properly compacted by the machine-tamped or packer-head processes, described hereafter, produced concrete of re-markable strength, density and impermeability, provided of course, that the products are cured in a humid atmosphere for 48 hours or more supplied by steam, water spray or a combination of both.

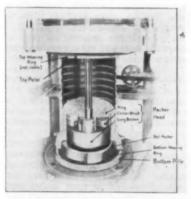
Pipe Machinery Developments

Two methods of manufacturing concrete pipe and reinforced concrete pipe have been commonly used in the United States since about 1910, known as the "Machine-Tamped" and "Packer-Head" processes. The first machine-tamped equipment, to



Fig. 4: Molds are immediately stripped from the pipe and re-used at once. Pipe are cured for 48 hours in a humid atmosphere provided by steam, water spray or a combination of both





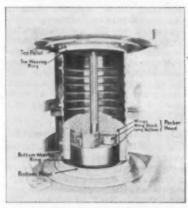


Fig. 5: McCracken packer-head assembly

our knowledge, was developed in Tacoma. Wash., and was known as the Thomas-Hammond machine. Subsequently it was improved in design and construction and known as the Bullen machine as manufactured by the Tuerke-McKenzie Co., Portland, Ore. A similar machine was developed in Indiana, known as the Easterday machine, which was improved in design and construction by a number of concrete pipe manufacturers. A tamping machine is manufactured today by the Universal Concrete Pipe Co., Columbus, Ohio, and known as the Universal machine. The Quinn machine, for the production of large diameter machine-tamped reinforced concrete pipe was developed and is for sale by the Quinn Wire and Iron Works, Boone, Iowa.

The first packer-head machine, to our knowledge, was developed by Stewart and Scheink, Waterloo, Iowa, prior to 1912 which was subequently known as the Zeidler machine. W. J. McCracken, Sioux City, Iowa, developed the bell packer and made improvements on the original Stewart and Scheink machine. The rollerhead method was designed by R. M. LaDue, Sioux City, Iowa, who also improved many design and construction features of the McCracken machine. Packer-head machines were also developed by the Martin Iron Works, Los Angeles, Calif., and by the Snow Manufacturing Co., of Los Angeles. For the purpose of this discussion, we are describing how semidry concrete mixtures are compacted in the manufacture of concrete pipe by the Universal and McCracken machines; the latter manufactured by the Concrete Machinery Co., Sioux City, Iowa.

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Machine-Tamped Process

The Universal machine-tamped process is employed in the manufacture of concrete pipe in diameters of 4 to 24 in. and lengths of 3 and 4 ft. Reinforced concrete pipe is made by this method in diameters from 12 to 60 in. and lengths of 4 and 5 ft.; in some cases in diameters of 72 and 84 in. and lengths of 6 ft. The inner form consists of a stationary metal core, Fig. 2, which is removed vertically after the pipe is made. The outer mold is made in two halves, securely locked together, and the assembly is secured at its base to a revolving steel table, Fig. 3. Concrete of a semi-dry consistency, about 3.5 gal. of water per sack of cement, is fed into the form as the outer mold revolves, in uniform layers and thoroughly compacted by two or more wooden strips fitted with metal shoes. Because the outer mold has a greater surface area than the metal core, the concrete revolves with the outer mold and the inner surface of the pipe is provided with a smooth finish. The pipe, during manufacture, rests on a metal pallet or base ring, that forms the joint and remains thereon, during the curing period. The joint, at the upper end of the pipe, is made by a metal shoe, attached to the core.

Steel reinforcement assemblies, formed to true circles and welded, are securely held in position at the base of the mold by spacers. For pipe 12 to 33 in. in diameter, a single line or cage, as it is commonly termed in the industry, is required under A.S. T.M. and other specifications to be held in the center of the pipe shell. The tampers operate near the inner and outer surfaces of the pipe and if the steel reinforcement assembly is out of position it will be jammed by the tampers and the pipe is a cull. For pipe 36 to 84 in, the steel



Fig. 6: McCracken roller-packer head (solid top type) for the manufacture of concrete pipe and reinforced concrete pipe 12 to 21 in. in diamater



Fig. 7: McCracken roller-packer head (revolving blade type) for the manufacture of reinforced concrete pipe 24 to 36 in. in diameter

einforcement, under A.S.T.M. and ther specifications, must be placed two lines or cages, each about one ach from the inner and outer surces of the pipe. The cages are held position at the base, by metal acers and three tampers operating etween and on each side of the ages, compact the concrete at a ate of 500 to 600 blows per minute assuring concrete of maximum rength and density.

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Because A.S.T.M. specifications ermit one cage of steel, placed as n ellipse, for pipe diameters 36 to 4 in. or more, and equal in sectional rea to one of the two cages, previusly mentioned, this means that 50 ercent of the steel reinforcement is equired when elliptically placed renforcement is employed. To be efective the elliptical cage must be curately placed and its position early indicated, by suitable marks, n the finished pipe. Moreover, when he pipe is placed in service the ninor axis of the elliptical cage nust be vertical. To achieve this end, allets or base rings are drilled so hat two or more longitudinal memers extend through the pallets on ach side of the major axis of the lliptical cage. The upper end of the age is held as an ellipse either by elding sectors of steel wire across he ends of the cage on the major xis or by using templates, made of mall angle iron, formed as an ellipse, which are removed just as the form s filled and before the joint is made. wo tampers, in both cases, operate lear the inner and outer surfaces of the mold, thus the cage is not ammed

When the pipe is removed from he machine to the curing room the uter mold is stripped, Fig. 4, and he pipe remains on the pallets or ase rings until the concrete is cured, in an enclosed room, by steam. rater spray or a combination of the





Fig. 8: Reinforcement assembly, showing longitudinal members crimped at intervals (left). Right, a view of the cage, in position, in an 18 in. mold for the manufacture of reinforced concrete pipe by the McCracken packer-head process at Huntington, W. Va.

two, for 48 hours. When and if the pipe are elliptically reinforced they are tipped to a horizontal position and the longitudinal members are clipped from the pallets which are then removed. The pipe is then transported from the curing room to the storage vard and kept wet by intermittent sprinkling of water, which is only necessary during hot, dry weather.

Concrete of remarkable strength, density and impermeability is obtained when pipe is carefully made by the machine-tamped or packerhead methods, described hereafter. This is recognized in the Standard Specifications for Concrete Irrigation Pipe, A.S.T.M. Designation C-118-39, the most rigid specifications ever adopted for concrete pipe of any kind. Six-in, pipe with a shell thickness of only 3/4 in. is required to meet a test of 75 p.s.i internal hydrostatic

pressure; 10-in. pipe, shell thickness 1 in., 60 p.s.i.; 15-in. pipe, shell thickness 1% in., 50 p.s.i.; and 24-in. pipe, shell thickness 21/8 in., 40 p.s.i. The following is quoted from Section 14, of the Specification:

"Hydrostatic Test
"14. (a) When an individual pipe is subjected to the internal hydrostatic pressure given in Table I, there shall be no leakage through the shell of the pipe. Moisture appearing on the surface of the pipe in the form of patches or beads adhering to the surface shall not be considered before.

adhering to the surface shall not be considered leakage.

"(b) The equipment for making the hydrostatic test shall be mutually satisfactory to the purchaser and the manufacturer. Suitable fittings shall be provided for exhausting the air and admitting the water into the specimen. A standardised pressure gage for recording the internal pressure shall be connected close to the specimen. The pressure shall first be increased uniformly to 10 p.s.i. and held at this pressure for 10 min. The water pressure shall then be. increased uniformly until the required maximum pressure is reached as specified in Table I. If the plpe is to be coated on the inside with cement grout or other material, the hydrostatic test shall be made before such coating is applied."

Packer-Head Process

The McCracken packer-head process is employed in the manufacture of concrete pipe, from 4 to 24 in. in diameter and in lengths of 2.5, 3 and 4 ft.; also, for the manufacture of reinforced concrete pipe 12 to 36 in. in diameter by the roller-head method, discussed later.

The stationary mold is made in two halves, securely locked, and because the area of the mold is greater than the packer-head assembly, Fig. 5, the concrete pipe remains stationary during manufacture. As concrete of a semi-dry consistency, about 3.5 gal. of water per sack of cement, is fed into the mold, it falls on the packer-head assembly which revolves at 250 r.p.m. and the con-

(Continued on page 114)





ig. 10: Left: Close up of 48-in. reinforced concrete culvert pipe as manufactured at Austin, Texas, in 1941. Steel reinforcement assembly is placed as an ellipse and its position in the pipe is indi-tated by the projection of one longitudinal member, at the left, and the marking at the right. lete the distinct web-like markings which indicate, at a glance, that the correct amount of water vos used in the concrete mixture to assure proper hydration of the cement. Right: Eighth bends, vand tamped by an expert workman, at Austin, Texas. Each unit shows the distinct web-like markings, previously mentioned

10

Construction

A Good Job Sells More Units

Twenty-six aids to good farm construction with concrete masonry

SEVERAL products manufacturers with whom we talked recently about the development of the farm market for concrete masonry tell us there is a real need for some simple instructions to guide the rural contractor in obtaining a first-class job. When we asked them if they would like to have us prepare a series of perspective drawings illustrating the various steps in concrete masonry construction from the footing to the attachment of the roof plate, they said it would be just the thing they need. Their next question was: "When can we get them?" Here they

In the drawings which follow we are attempting to present the important details and steps in construction in pictorial form with the hope

that they can be quickly grasped by °W. G. Kaiser is manager of the Farm Bureau, and E. L. Hansen is agricultural engineer of the Portland Cement AssoBy E. L. HANSEN and W. G. KAISER*

masons and builders who have had little if any previous experience in erecting buildings with concrete masonry units.

During the past year there has been an increasing demand for concrete masonry for farm construction. This has been partly due to the scarcity of other materials and partly to the awakening of farmers to the fact that concrete masonry offers a construction material second to none from the standpoint of durability. economy, fire-safety and other desirable properties.

Since concrete masonry is a relatively new material in many rural areas, it is essential that producers assume the responsibility of seeing that it is used in a manner to reflect

credit on the material and thereby assure its use in increasing volume in the potentially large farm market The sketches which follow will doubtless prove quite valuable in an educational program with rural mason and builders.

Properly Constructed Building Sells Concrete Masonry

In our talks with products manufacturers it was brought out that builders frequently come to them for information on how to build with concrete masonry. While the desired information was usually given to the inquirer orally, the chances were good that the builder was unable to remember exactly what was told him with the possible result that some detail of construction did not conform to best recommended practices Under such circumstances the owner did not get the best possible job-the

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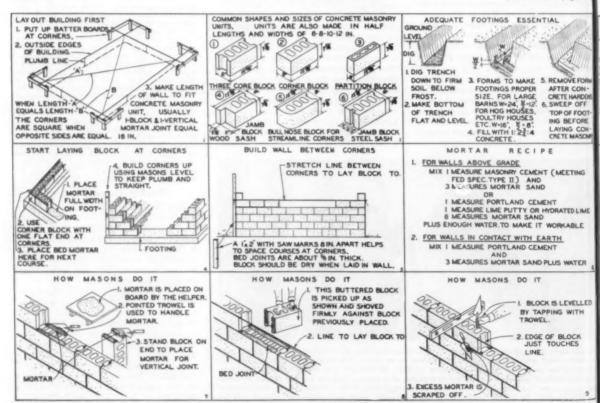
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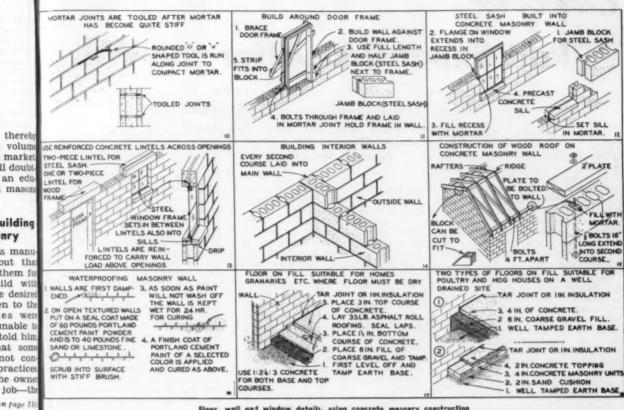
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Eight suggestions for good construction and a mortar recipe



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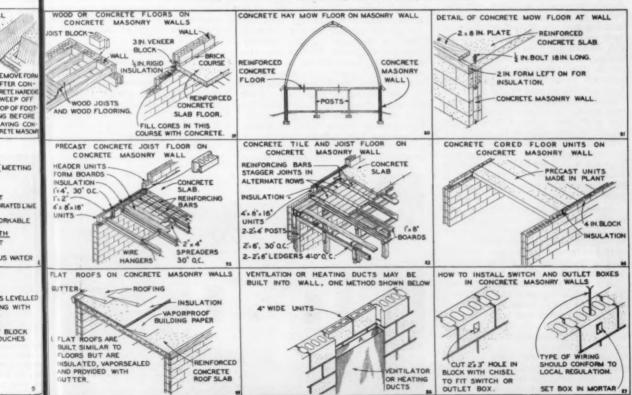
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Floor, wall and window details, using concrete masonry construction



Showing more roof, wall and floor details, and methods of providing for ventilating ducts and electrical outlets



Plant Expansion After the War

Concrete products industry review of present business conditions and future plans indicates many will buy new equipment

THIS ARTICLE is based entirely on returns to a questionnaire directed to a selected list of concrete products manufacturers. We sought, in our letter, to develop information and data concerning business conditions and forecasts for future business, operating problems, new products, merchandising and planning, that are foremost in the minds of the industry today.

Questionnaires were sent to a limited number of concerns, known to be leaders in the industry, and we are sincerely grateful for an enthusiastic response. Returns were received from all sections of the country, from companies manufacturing roughly 14 percent of the national production of concrete masonry units. We also received replies from several manufacturers of concrete pipe and other concrete products.

Replies to our letter reflected practically universal optimism for the future of the industry. Volume of business did not decline seriously in 1944 and likely would have equalled the volume for 1943 but for serious manpower shortages. The extent to which the farm market has responded to promotional effort has been surprising, and is the principal reason that 1944 volume held up so well during a year when home building and other normal construction activities were severely curtailed by restrictions. The farm market will continue lucrative in 1945, and the industry will likely have a volume of business comparable to 1944, even if the war in Europe continues through most of the year.

According to nearly all letters received, the concrete products industry is slated for a level of business activity in the early post-war years that will far exceed any one previous year in its history. It will be remembered that the concrete masonry industry had been establishing record volume years up until the time war construction was largely completed. The farm market will be an important factor as will be all other types of deferred construction. A number of new products will be manufactured and many war-born concrete products will be continued after the war. The concrete floor is destined for intensified promotion when construction resumes. It is the opinion of many companies that the market By BROR NORDBERG

for precast concrete floors for homes and small industrial establishments has barely been scratched.

Merchandising plans are being perfected and potential markets are being analyzed. Many plants will be doubled and trebled in capacity. The post-war concrete masonry unit manufacturing plant will incorporate, in addition to greater productive capacity, labor-saving equipment wherever possible. Emphasis will be on more effective and faster curing methods and new yarding and handling methods, including bulk cement batching equipment in many of the larger plants. It is in material handling that the industry has its principal opportunity to cut costs.

Business Conditions

Sales volume in 1944 apparently was slightly lower than in 1943, although the same number of concerns reported increases as the number that had decreases. Several concerns enjoyed the same volume of business as in 1943. However, of those reporting decreases, most companies were in the maximum size range that normally concentrated on industrial and urban residential construction. The greatest single factor favorably influencing 1944 volume was the development of a farm market, and producers in the agricultural states

generally reported a high level of business activity.

Two Iowa firms reported a 1944 volume exceeding that for 1943 while a third reported the same volume of sales as in 1943. All three expect a volume of business in 1945 as least as high as in 1944, with available manpower the determining factor. One of these companies anticipates 60 percent of 1945 volume will be for farm construction, with 20 percent for home construction and 20 percent for industrial building. Prices were the same as the 1943 level.

In Wisconsin, the farm market was outstanding even for a large manufacturer reporting from Milwaukee. All reporting from that state enjoyed a greater volume in 1944 than for 1943, one stating that 1944 was the greatest in its history and that 1945 will be a still better year if the European war ends early in the year. One company sold practically all its output to farmers and the others reported farms as the main outlet. Prices remained at 1943 levels in 1944.

Large volume producers in metropolitan centers, accustomed to serving housing and industrial building principally, reported the greatest drop in volume during 1944. One large eastern concern, which normally has 95 percent of its volume of sales concentrated in homes, has 50 percent decrease in volume during 1944 but anticipates a volume of

(Continued on page 101)



Concrete masonry milk house near Clyman, Wis.

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MODERN Concrete Mosonry



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> MANUFACTUNING ALPENA, MICHIGAN

COMPANY

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1904
1909
First Basser concrete block

First Basser concrete block machine.

Besser Power Tamper operating even hand machine with self-discharging mixer and skip loader.

Besser Single Automatic Face Down block machine. Capacity 3 block per minute.

1924

Besser Plain Stripper Pallets introduced. Cored Pallets became obsolete when all sixes and types of blasks were made on One Set of Plain Pallets.

> Besser machines making tamped, stripped block with smooth finished Fully Pressed Top.

FULLY PRESSED TO

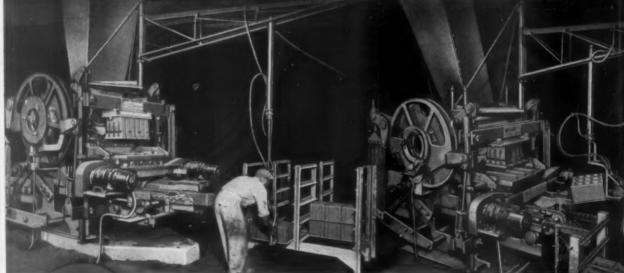
ADVANCEMENT

er Plain Pallet Vibrapac using irectional vibration. These maes have been perfected until they lead in the industry for ity product, quantity production automatic operation.

PCIOO

The present Besser factory occupies 85,000 sq. ft. floor space. The Besser factory has grown from a small shingle and stave mill adapted to use in making the first Besser concrete block machines to one of the most modernly designed and equipped factories for the manufacture of U. S. Navy war products and concrete block manufacturing machinery and equipment.





A FEW of the LEADERS who operate OR MORE VIBRAPA



(left) JOHN STRANDBERG

(right) C. E. SWANSON

Concrete Building Units, Inc., Kansas City, Ma. Barnes & Cone, Inc., Syracuse N. Y.

H. W. Bell Co., New York, N. Y.

Bethayres Concrete Products Co., Beth ayres (Suburb of Philadelphia, Pa.) Borin Lumber & Fuel Co., Detroit, Mich. Cities Fuel & Supply Co., Milwaukee.

Ellis Concrete Products. Bridgeport, Pa-

Layrite Concrete Products Co., Spokar Wash.

Moule Industries, Micmi. Fln.

Mercier Brick Co., Detroit, Mich.

V. Puturzo. Bro. & Son. Inc., Baltimore Md.

Precast Concrete Products Co., Chicago

Utah Concrete Pipe Co. Salt Lake City Utah



ALL THESE DIFFERENT SIZE UNITS WERE MADE ON ONE SET OF PLAIN PALLETS ON A BESSER PLAIN PALLET STRIPPER

Concrete Products Review

(Continued from page 102)

10,000,000 8- x 8- x 16-in. equivalent units annually after the war. Similarly, a large Detroit manufacturer had a decrease in volume of 40 percent in 1944 compared with the 1943 level. A Connecticut producer, serving all manner of construction on a large scale, had a decline of onethird in volume in 1944, although over 2,000,000 equivalent 8-in. units were sold. This company is planning for a post-war annual volume double its previous high record in 1943. Its 1945 sales distribution will be farm, industry, institutional, commercial and residential building in that order of relative importance.

Farm business was of greatest importance in the midwestern farming states but had its influence over the nation to a varying degree. In southern Ohio, for example, one company having 60 percent of its volume of sales among farmers, with 30 percent for industrial building and 10 percent for homes, reported an increase of 50,000 units in 1944 over 1943. In the same city, another manufacturer, not so favorably located with respect to the farm market, had a 30 percent decline. The latter concern has in the past concentrated on industrial buildings almost exclusively

In the northern part of the state, a big metropolitan producer reported a substantial volume increase in 1944, with 30 percent of its business farm building, 50 percent homes and 20 percent industrial building predicted for 1945.

Conditions were spotty in the South. A West Virginia manufacturer of concrete masonry units, for example, enjoyed an increased volume in 1944, chiefly beause concrete units required no priorities. Principal outlets were farm building and repair jobs in the coal industry, which will continue in 1945. In Tennessee, volume was down for several companies. One reported a decline of 30 percent, whereas if manpower had been available 1944 volume would have exceeded 1943. Labor saving equipment installed in the plant of this company will permit handling a larger volume in 1945. Sixty-five percent of the volume of this company's sales will be to farmers in 1945

Oklahome

STRIPPER

In Texas, our reports show a decline of about 30 percent in volume of sales in 1944 compared to 1943. Principal dependence will be on farm building in 1945 and some industrial building. From Alabama, a manufacturer of concrete specialties, including meter boxes, roofing tile, concrete steps, highway markers and lawn furniture, had a 10 percent increase in 1944.

West Coast producers reported increases in 1944 and anticipate good volume in 1945. Considerable war construction persists on the coast. A producer in Washington State reported that 80 percent of sales volume in 1945 will be to farmers, 15 percent for industrial building and 5 percent for home construction. California concrete pipe manufacturers had a good year in 1944, principally in irrigation pipe, and anticipate favorable business in 1945.

Where Products Are Sold

Comments on business conditions taken, in part, from a few of the received tell more of local conditions

A manufacturer of concrete masonry units and concrete pipe in West Virginia wrote: "The volume for 1944 exceeded that for 1943 considerably, accounted for by the fact that concrete masonry units required no priorities and buildings could be constructed with blocks cheaper than with any other materials. It is hard to estimate the building that will be done in 1945 as much depends on the outcome of the war. At the present time most of the materials are being used by farmers for repair jobs and by the coal and mining industries for needed improvements.

"We have been promoting the farm market by furnishing farmers descriptive matter showing all the different types of buildings for which our materials are adapted, and the response has been very good. We anticipate a large volume of business to develop immediately after the war is ended. We are increasing our facilities by doubling our present capacity.

"We anticipate a large volume of business where wood structures were previously used, as the public has learned that the new fireproof materials cost no more than inflammable wood products previously Through advertising the builders are learning that precast units, factorymade by line production methods, cost little if any more for buildings than less durable, fire-hazardous ma-

A large producer of concrete units, principally of heavy aggregates, serving part of eastern Ohio and western Pennsylvania, wrote, in part:

"Our 1944 sales were 23 percent less than in 1943, due to lack of labor. We do not know how much business we would have had if we had the labor. The demand was there. The price received was approximately 2 percent better than in 1943. Prospects for 1945 are wonder-We anticipate that our 1945 sales will be distributed as follows: Government and/or direct sales, 25 per cent; dealer sales, 75 per cent. Dealer sales were divided 60-40 between farm and other types of construction."

From Missouri, a concrete products producer had this to say about business conditions: "The volume and prices in 1944, if we had been able to obtain enough labor for production, would have been about the same as in 1943. Our production in 1944 was off approximately 10 percent due to the labor shortage, but if we can retain our manpower we will have a production in 1945 equivalent to 1944. However, if we can obtain laborers, we are looking for an increase comparable to the amount of additional manpower we obtain.

"The distribution of sales in 1945 as I analyze it would be set up as follows: About 35 percent to the farm; 45 percent to home building; 20 percent to industry and commer-

cial projects.

"Farm building plays a very important part in our operation. As a matter of fact it is so important at the present time that if we dared to put on a strong promotional program to the farmers we would have to eliminate the supply to the urban area."

Also, from a farming area, an Iowa manufacturer wrote in part:

"Our volume for 1944 was about the same as for 1943, a little over 400,000 units, and we expect to turn out about the same amount this year. We have been turning down as much business as we have been taking, as we only have six of our men left at the plant and that is all they will allow us in this area, as the plants on direct war work are all undermanned. Our peak production, several years back, was slightly under one million units annually and we expect to top this in post-war work, although we would not try to guess what years after the war will be the biggest building years. We expect to see farm building increase and home building start up again soon after restrictions are relaxed, with a good volume in industrial and public buildings starting about a year later.

A large concern in Tennessee had this to say about business conditions. "Our 1944 volume of sales decreased approximately 30 percent from that of 1943. This reduction was due entirely to our inability to produce and the lack of production was due to the manpower shortage. We could have sold more than in 1943 had we the block available. Our sales price increased approximately 10 percent. Prospects for 1945 are much better than 1944, due to the fact that we have recently obtained labor-saving equipment, which should materially increase our production. We expect to equal 1943's production and if we receive delivery of an additional machine ordered, we should surpass it. We firmly believe selling again will be no problem. The postwar outlook to us is particularly bright. We base this prediction upon the vast amount of building to be done, together with the shortage of lumber and the increased used of our product. We anticipate 1945 sales to be distributed very much in the same order as in 1944; about 65 percent farm building, the balance to be made up of home building, essential industry building and additions or improvements on war projects."

A Texas producer had these comments on business conditions and prices:

"Our 1944 volume was about 30 percent less than 1943. Although we advanced our prices to our ceilings. the readjustment with labor and other unknown expenses prevented us from making even our small margin of profit. As to the prospects for 1945 and post-war for our company, they look very bright at the present. However, we find our costs exceeding even the highest cost of last year, so there is no telling where we will be on our net profit for 1945. If the powers-tobe at Washington will adjust their taxes just a little and remember there are still individuals in business that like to progress, we should do a good profitable postwar business. So long as the European and Japanese wars are on, our main business will be farm and industrial buildings, very little home building."

In 80 percent of the returns to our letter it was indicated that from 35 percent to as high as 80 percent, in one case, of the 1945 production of concrete masonry units will be sold for farm construction.

Promoting Farm Business

We asked, specifically, in our letter whether the farm market is being actively promoted and for comments on the response to special promotion. In practically every case there was ready response; in fact so great in some instances that manufacturers could not risk too much advertising at this time, where considerable plant capacity had to be ear-marked for essential urban construction.

Some comments, taken from a few of the letters received, tell of local experiences.

An Ohio producer, with a normal capacity of 3,000,000 units annually, said, "Farm work has been promoted by us for a number of years. During the past two years, farm work has responded to such an extent that in 1943 it comprised 36 percent of our total business."

From Missouri, we received the following comments from a producer who literally must ration the production allocated to farmers: "For the past two years we have not done a great deal of promotion of the farm market but we have allocated approximately 30 percent of our production to these markets. The reason is obvious. We have been short on labor and expansion of war plants and war housing has been a must."

From Iowa, a producer in the Tri-City area wrote, "In promoting the farm market, we have been circularizing all box holders on the rural routes out of Davenport and Bettendorf. In addition we have for years cultivated dealers in the small towns within a radius of 50 to 75 miles and with our own work and the work of these dealers, we have had a very good response from the farm market."

Another Iowa producer, who has actively promoted the farm market for several years past, said, "We have not been promoting the farm market for the reason that we have had more business than we could possibly take care of and did not want to make it more difficult for ourselves. We had several pieces of copy all ready to be used in direct mailing but held up the printing because of the above mentioned facts."

From Milwaukee, definitely a metropolitan area, a producer wrote, "The farm market should become better and better as the farmers learn to use masonry and when they acquaint themselves with the value of lightweight insulating blocks. This farm market will certainly take 50 percent of our production."

From Tennessee, we received the following comments: "As to the promotion of the farm market for concrete masonry, we did concentrate on this in 1944 and the results were good. We used county newspapers and literature as mediums of advertising. We found the results from advertising in county newspapers exceptionally good. We believe the future for the farm market is particularly bright, since the farmer is now learning to build with concrete masonry just as easily as he did with lumber and he likes it much better."

Postwar Markets and Plans

When it came to estimating postwar volume of business, predictions ranged from a third greater than pre-war sales levels to two or three times as great. Some concerns are now planning for the biggest production in their history. An outstanding example is one of the largest producers in the metropolitan east, who normally concentrates on concrete house construction. This firm estimates that in the immediate post-war years it will consume 120,000 bbls, of portland cement annually and 2500 carloads of lightweight aggregates (mainly cinders). The building of 15,000 homes a year in the city and 5000 just outside the city are anticipated.

A New England producer said, in part, "We anticipate more than double pre-war sales in every item. We are mapping out a complete marketing plan now, with the aid of a marketing consultant firm."

A Missouri producer wrote, "The

post-war volume should be much greater than the pre-war volume. The reason is very simple. During this war we have supplied all kinds of construction jobs from small retaining walls to great office buildings. We have trained the general contractor and masons to use concrete masonry to the extent that it has become a necessity and not a substitute. To serve the expected market, we have already installed equipment to triple our production if manpower can be had."

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New Markets and Products

New markets and new applications for existing products are to be intensively promoted, according to replies to our questionnaire, and many of the products developed during the war will be retained for postwar markets. Apparently precast concrete floors, particularly of the floor filler type, are to be intensively merchandised, since fully half of the companies replying to our letter are planning to expand their operations in that direction or are contemplating the manufacture of floor units. Several manufacturers indicated that territorial limits will be broadened for concrete masonry units.

Typical of planning are the following excerpts from letters received. An Ohio firm stated, "We expect to expand our market for precast concrete floor slabs. The market in this respect has not been touched."

Concrete Units, Inc., New York, N. Y., wrote as follows, in pointing out the availability of a new aggregate:

We have developed a lightweight aggregate which we call 'Sinterlite. This name comes from our method of manufacturing known as 'Sintering.' This new aggregate is made from fly ash and slag (the residue from burnt pulverized coal) or from any low grade cinder or ashes which at the present time have no value as a concrete aggregate. We are now reducing the manufacture of 'Sinterlite' to a machine proposition which can be economically installed by any moderate size products plant. This machine will produce high grade lightweight aggregate at a low cost."

A Missouri producer of concrete masonry units is anticipating a very large market in concrete floors and roofs. He writes, "We are very eager to promote floors and roofs. As a matter of fact, we have already started by setting up a volume-type joist plant in Kansas City, Kans., and last November we completed the production of approximately 22 miles of precast concrete joists. We also took a contract for both placing the joist and pouring the 21/2-in. floor slab, about 300,000 sq. ft. in all. This type of floor and roof you may rest assured will be set up as a must for expansion in the post-war period. This is a very speedy type of concrete floor and concrete roof construction and requires hardly any lumber for erection. The price per square foot is very nominal."

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From Iowa, we received the following reply:

"We expect to devote increased efforts to the sale of pre-cast joists and think we will find demand also for concrete floors, using lightweight concrete block as filler units between

poured-in-place joists."

Another producer from a midwestern farming state said, "At this time
we do not anticipate the promotion
of any new products. However, we
do expect to cover a larger territory
than ever before. This territory in
the past has been served primarily
by clay tile."

A Milwaukee producer said, "We have found a very large market for a low cost fireproof floor and this new product we intend to push with our utmost ability. This new product will affect the block sales considerably."

From Texas, we received the following comments:

"We are contemplating new uses of concrete products; particularly are we going to promote acoustical blocks as well as our precast vibrated joists and lightweight concrete for floor slabs, particularly for homes and light industrial buildings."

The immediate postwar prospects for concrete pipe in irrigation are excellent, according to a California manufacturer of concrete pipe who writes, "We are not contemplating the promotion of new markets at the present time as there is more postwar work in the irrigation line than we will be able to handle for some years to come."

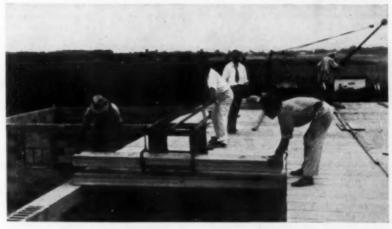
Merchandising—Plant Expansion

Three of our questions were concerned with merchandising and advertising for postwar business, the forecasting of potential sales and the planning and correlation of plant facilities with anticipated markets.

Many of the large producers are planning future plant capacity to handle all business that may develop in their territories, and considerable extension of transportation to encompass larger territories. Some of the more conservative anticipate new competition will arise and, while contemplating plant expansion, are guarding against over-expansion.

One outstanding feature in postwar merchandising plans is the extent to which dealer organizations evidently will be developed and extended. A combination of dealers with direct sales effort seems to be the ideal to many.

Judging from replies to our question as to what forms of advertising will be employed, the industry had barely started to advertise in the pre-war period. Prolific use will be



Installing concrete floor slabs. Producers anticipate a large post-war market

made of newspaper and magazine space, direct mail, the distribution of technical literature, radio, billboard advertising and home shows. Farm papers will be extensively used. One big Eastern company expects to allot two cents per unit in advertising concrete homes to prospective purchasers.

The postwar plant will undergo considerable face-lifting if letters received are any criteria. The emphasis will be on more efficient utilization of labor along with greatly increased capacity. Bulk cement handling equipment will be widely adopted in the big plants and several companies are contemplating systems for drying and blending cinders. Curing will be improved and speeded up and more efficient yarding and handling methods are being planned. High lift trucks of the fork-type for loading apparently will be widely used. Over half of the companies reporting, indicated that yarding methods will be revamped to reduce the manual labor in handling units.

Following are typical remarks from a few letters, in answer to the questions discussed in the foregoing paragraphs.

A southeastern producer wrote, "We propose to revamp our curing rooms in order to cure blocks more quickly and thoroughly and reduce handling cost by installing mechanically operated tractors for handling blocks from machine to curing rooms to yard."

From eastern Ohio, a large manufacturer of concrete units commented as follows:

"We have in our post-war plans tried to synchronize all forecasted potential sales with our planning of additional capacity. We intend to enlarge our mechandising program by the addition of dealers in new territories. Our post-war plans call for new methods in yarding and loading trucks, in addition to increased capacity. Our post-war advertising will consist of better personal contacts with architects, builders and our dealers and more effort in creating demand for our products by such contacts."

One of the metropolitan New York City producers confined his remarks to plant operations, as follows:

"We have designed and intend to construct after the war an automatic plant for manufacturing block, brick or tile. This plant will be entirely automatic, starting with the feeding of aggregates, through the mixers and block machines (the plant has been designed to take any of the vibrating block machines now on the market) into high pressure steam chambers and finally to loading on to trucks. With this plant, four men will be able to handle the entire operation from the feeding of aggregates to the loading of trucks and produce the equivalent of 5000 8- x 8- x 16-in, block every eight hours."

Another producer in a large eastern city is planning plant improvement to cost \$40,000. The capacity increase will involve borrowed money (risk) for working capital only. This company will have its own sales organization and architect for concrete homes and will promote the entire development. Bulk cement equipment will be installed and bins for two main sizes of aggregates. Cinders will be blended on a tunnel conveyor below ground storage.

Nearby, in New England, one of the largest producers wrote, "We are now making a study of a dealer plan, and expect to adopt one, routing 85 percent of our sales through dealers. We expect to use fork-type trucks, picking up block in large cubes. Curing will be done with high temperature and forced hot-air circulation that will make a 1000 p.s.i block dry, in one cycle operation. We will use direct mail, newspapers, farm journals, trade journals and billboards."

A large midwestern concrete products producer answered our questions as follows:

"We would like very much to be able to accurately forecast our sales for the post-war operation but the settlement of the peace with our enemies and the ultimate coordination of the allied nations will, in my opinion, be the deciding factor in forecasting a close and accurate picture of both production and sales.

"We do contemplate a larger merchandising program and I believe wide awake manufacturer every should sit up and be prepared to meet competition in the post-war period. My plan is for radio, newspapers, farm journals, direct contact with the public, and high quality material. I also feel it is of great importance for all the concrete product manufacturers to be alert to the postwar competition. I believe we will have a lot of new substitutes and there is a danger that we may become so complacent, due to the rush of business we are enjoying at the present time, that the concrete may start to set in our brains.

"Post-war plants will undoubtedly be arranged so as to take care of new methods in yarding. There are new ideas being developed and without a doubt we will see some very good saving devices perfected for this purpose. Curing will be practically standardized and at the present the Portland Cement Association and the N.C.M.A. are doing a tremendous amount of research in this line with the object of finding a definite solution to the problem.

An Iowa producer said:

"As our present plant was built in 1921 and as the industry as a whole has learned a great deal since then, we feel that our plant is obsolete and we are studying the possibility of a complete new lay-out in a new location. If we are able to make the change, we expect to incorporate the various new ideas which have been developed to obtain the most modern methods in all plant operations. In fact, we have in mind some "dreams" of our own that we so far have not seen in any other plant."

A manufacturer in central Tennessee wrote, in part, as follows:

"Our postwar plans for the promotion of new markets consist mainly of concentrating more on the residential builder, farmer and other small consumers, rather than depending to a great extent on commercial buildings, schools, churches, etc., as we have in the past. We feel that small consumer trade affords a much steadier and more dependable business. Prior to the war we were successful in the use of our units in floors and roofs and after the war we expect to promote more of this type of construction in smaller buildings.

"We are now preparing to expand

our plant building to take care of the new vibrating machine we have o.dered and this will increase our p oduction about 40 percent. This expansion is being done, actually, towards post-war planning. A great deal of thought, too, is being given to new methods of yarding, curing and mixing. We are cooperating with our national association along these lines.

From the Southwest, we received the following reply to our questions:

"We are contemplating enlarging our merchandising program, providing personnel is available. Our ideas in promoting a merchandising program are through local press displays, radio, N.C.M.A. pictorial publications, and Portland Cement Association booklets on various types of commercial and farm buildings. together with residential construction. We have already installed some new equipment and have on order for as early delivery as possible several thousand dollars worth of new equipment for both our plants to bolster up our yearly production and in preparation for post-war business."

A California manufacturer of concrete pipe contemplates the installation of new lift equipment, curing shed facilities and better feeding of the mixer and pipe machine in a

new plant.

Another California producer writes, We are endeavoring to develop our plant and personnel to take care of all post-war potential sales. We will endeavor to enlarge our merhandising program but will not consider dealer sales. It takes considerable technical skill to market and install our products which dealers do not have. When it is possible to get the equipment, we intend to buy mechanical devices to handle our product."

Air-Entraining Cements-Aggregates

Our final question concerned experience with air-entraining cements and lightweight aggregate. A number of concerns are using air-entraining cements with varying degrees of success. Some use these cements exclusively without stating why, while others have thus far used them to a limited degree. Our impression is that the industry is lacking in experience to pass any authentic judgment on the merits or shortcomings of these cements, judging from the widely differing opinions we received. It seems to be the impression that the future development of the induswill be in larger utilization of lightweight aggregates.

Opinions are expressed in the following excerpts from letters received from all parts of the country:

"We have not been favorably impressed with air-entraining cement, for it takes much longer to reach its ultimate strength than the fine ground cement which we have used for the past few years. We are, however, very much impressed with lightweight aggregates and feel that they will be manufactured and used almost exclusively for concrete masonry units when obtainable at anything like a reasonable cost."

"We have tried only one carload of air-entraining cement which used in the manufacture of cinder block. It seemed to cut down our breakage both at the machine and in subsequent handling of the green product, but we found a considerable reduction in the compressive strength of the units which were tested at 28 days. Since 1926 the vast majority of the concrete units which we have produced have been made with cinder aggregate. The cinders which we use have always been highly satisfactory. We have not used any other lightweight aggregates.'

"We've tried air-entraining cements and found them excellent with lightweight aggregate. Heavy sand and gravel aggregates with vibration may be used with Vinsol resin cement successfully if the sand is a little coarse, but we found it difficult to use these cements with a sand that is a little loamy. It is not a cureall for cracked units. Due to the present demand for block we have been using high early strength cement to a better advantage for the past year, a method we always resorted to when pressed hard."

"Our experience with air-entraining cement is very limited. We have conducted a test with this cement for our block but find no practicable advantage over what we are using. When used for flat slab and floor construction we find that air-entraining cement excels anything we have used for troweled finish floor, and when the temperature is in the nineties it gives the cement finisher a chance to get a very good finish due to the retarding properties. The use of lightweight aggregate will undoubtedly increase in the post-war era, primarily due to shipping weight. I predict that the larger plants will ship lightweight block 300 to 400 miles. We ship our heavyweight block now as far as 200 miles and many jobs have been shipped 600 miles."

"Our experience with air-entraining cement has been that it gives more cohesion to the block as it is made, therefore, it cuts down on breakage in handling from the machine. We have always been 100 percent lightweight aggregate producers. We are primarily producers of cinder blocks but have used slag and Hay-

"We like the air-entraining cements, but they require more water than can be used in the making of blocks on our machinery. We like lightweight aggregates and feel that they in time will supplant all heavy aggregates."

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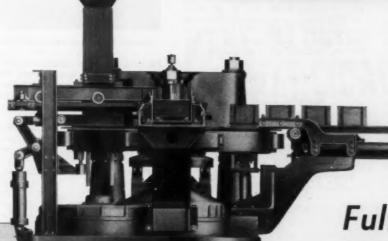
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THE OUTSTANDING DEVELOPMENT IN BLOCK MANUFACTURING IN YEARS



The New

Fully Automatic
Block Machine

- Production speed variable—up to 14 blocks per minute.
- Magnetic vibration combined with hydraulic pressure (compression is applied through adjustable pressure control—vibration is employed but limited to mold box).
- Push button control actuating electric timing switches gives completely automatic operation.
- Blocks delivered from machine automatically.
- High output on a slow speed rotary table—Moving parts kept to a minimum.
- Full floating adjustable mold box carried by heavy springs.

THIS machine represents a new advancement in concrete block manufacture. While it is an entirely new type machine for making block, it has improved on the best characteristics of existing types of machines. And it has the basic operating simplicity and durable life that has made J&C Rotary Table Brick Presses such an outstanding brick machine. It will produce up to 14 highest quality block perminute. A better block is made by combination action of magnetic vibration and variable pressure. Here is the machine you will want to use—to get the large post-war jobs and more small ones as well.

We have prepared an advance bulletin describing the operation and features of the New J&C Block Machine. Write for your copy today.

J&C has served the Masonry Industry for over 40 Years — and is prepared to render even greater service when Victory is won. SAGINAW HICH GAM

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Concrete Masonry Directors Meeting in Chicago

National Concrete Masonry Association holds meetings of directors and standing committees, and elects officers

To carry on the work of the National Concrete Masonry Association, a meeting of the Board of Directors and important committees was held at the Sherman Hotel, Chicago, Ill., February 8 and 9. This meeting took the place of the convention which usually is held at this time, but had to be postponed until the war situation will again permit the holding of conventions. If possible, the convention may be held in May or June of this year.

New Officers

Officers elected for the ensuing year were as follows: For president, Clarence E. Ehle, Cleveland Builders Supply Co., Cleveland, Ohio; former president, Fred W. Reinhold, Anchor Concrete Products, Inc., Buffalo, N. Y., moved up to chairman of the board, and Walter J. Manhardt, Best Block Co., Milwaukee, Wis., joined the board of directors, ex-officio, as past chairman of the board; vice-

presidents elected were Deane R. Lynde, Cinder Concrete Products, Inc., Denver, Colo., Edwin P. Weese, Carbon Concrete Brick Co., Youngstown, Ohio, and Paul E. Bohm, Concrete Products Corporation, South Bend. Ind.; secretary - treasurer. Henry Buchholz, Chicago Insulcrete Co., Franklin Park, Ill. F. M. Kettenring, Graystone Concrete Products Co., Seattle, Wash., was elected to the board to take the place of Mr. Weese. Committee membership will remain essentially the same.

Curing Tests

Perhaps the outstanding activity of the meeting was the review of proposed Curing Tests outlined in a report by R. E. Copeland of the Portland Cement Association who will supervise the tests under the direction of the Committee on Curing Methods.

This committee, consisting of Chairman Jay C. Ehle, Philip



Group at directors' luncheon. In the foreground may be seen Geo. Goelitzer, Kansas City, and Harve Kilmer



Fred Reinhold, Buffalo, N. Y., left, and John Strandberg, Kansas City, Mo., past presidents



Clarence E. Ehle, new president N.C.M.A.

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Paolella, and Benjamin Wilk, has been increased to include Paul Woodworth. The outline of the tests was read by Chairman Ehle and several suggestions were made to change the test procedure for simplification.

As stated in the outline of the proposed tests the primary objective is to investigate physical properties of concrete masonry units which have been cured in humid air at 160 deg. to 210 deg. F. for a sufficient period to attain a compressive strength of at least 1000 p.s.i., after subsequently being dried rapidly to a moisture content of less than 40 percent absorption. It is desired to compare the physical properties of concrete units cured and dried in this manner with those of concrete units cured at the more usual temperatures of 110 deg. to 130 deg. F., and thereafter slowly dried. It also is desired to determine whether curing at the higher temperatures followed by rapid drying and possibly rapid cooling is detrimental to the concrete as regards compressive and tensile strength, durability and resistance to cracking.

Another of the objectives is to investigate the effect of different variables in the curing process on its practical application as well as on the physical properties of the concrete. Within the scope of the type of curing being considered it is desired to determine approximately the optimum conditions for producing satisfactory units ready for delivery in the shortest practicable time.

Four factors have contributed to curing practices according to the report: the growth in size and production capacity of the plants; lack of storage capacity to permit 28-day curing; A.S.T.M. and federal specifications contain requirements which limit moisture content at delivery to 40 percent absorption; and the problem of cracking concrete walls. The study will include test units made with the following aggregates: sand



Claude Chandler, Tulsa, Okla., left, and L. Schwalbe, Milwaukee, Wis.

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and gravel, cinders, and Waylite. Haydite and Celocrete may be included in the tests. As stated in the report, Haydite has a rather low coefficient of expansion and its inclusion would assist in revealing whether this factor is important.

Aggregate Division Meetings

On February 9 the following Division Committee meetings were held: Cinders, Haydite, Waylite, Celocrete. Discussions at these meetings in-

cluded practical problems in handling these aggregates for best results. In the Haydite meeting Claude Chandler, Benj. Wilk, and Walter Sherman, entered into a lively discussion on construction problems. Insulation of cores of units to prevent condensation on walls by using Haydite, vermiculite and other products has proved very efficient according to Mr. Sherman. He also told about the use of reinforcing steel in concrete masonry walls at floor lines and below windows. In painting concrete masonry walls where color is involved, contrasting colors are used for the two coats to insure perfect covering. Waylite and Superock consolidated their meetings. Paul Woodworth, Harold Spaight, Harve Kilmer, John Bailey and others attended this meeting. Construction problems, the post-war market and other subjects were brought up. Paul Woodworth explained in some detail the curing problem and what the



Donne R. Lynde, left, and E. W. Dienhart

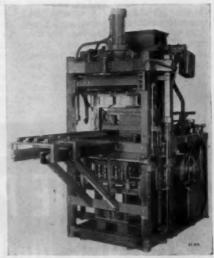
coming tests are designed to bring out. Cinders were discussed in a closed meeting. The meeting of the Celocrete committee consisted of a round table discussion during which supplies and specifications were discussed. Manpower and material shortages have delayed the start of the new Celocrete plant at South Chicago. The basic research program, dealing with uniformity of quality through manufacturing controls field and laboratory investigations also were discussed. Standard tests for density, specific gravity, soundness, and weatherability will be

Two luncheons were held for the

directors and guests. The Chicago area producers and Clarence Ehle very graciously supplied refreshments. I. J. Westerveld, Wausau Concrete Co. led in the discussion at the second day's luncheon in presenting a report of the Natural Aggregates Committee. C. E. Swanson of Concrete Building Units Co., and Walter Sherman also entered into this discussion. Better mixing, more tamping, and proper curing practices may offer part of the solution to obtain lower absorption, was the consensus of the report which was based on the results of a recent questionnaire sent out by Executive Secretary E. W. Dlenhart.

MAKE BLOCK HYDRAULICALLY

The Kent Hydraulic Vibra-Press is the last word in automatic rapid production of concrete block. It is the only block maker that combines pressing and vibration through hydraulic operation. Vibration is entirely within the mold box and is insulated from the rest of the mechanism. The result is stronger block from leaner mixes and increased production of a cleaner product of more uniform density. Write today for detailed literature.

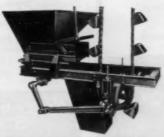


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Pressed Steel or Cast Iron

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Kent Machinery will gear your plant to meet the tremendous construction demand when the war ends. Every machine is precision made for quantity and for quality production. Each has features that merit your closest investigation.

THE KENT MACHINE CO.

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Semi-Dry Concrete

(Continued from page 99)

crete is thrown radially by the wings against the mold, by centrifugal force. The wings and the bell packer are inclined planes—like a wedge and the concrete that falls between the cheeks of the bell packer is wedged against the mold to form the joint. Thus the bell or other joint is thoroughly compacted under high pressure and the inner surface provided with a smooth finish.

As the packer-head assembly slowly rises, the concrete is thrown against the mold to form the barrel of the pipe and thoroughly compacted, under high pressure, as previously described. Two wings are attached to the packer-head assembly for making small pipe and four for the larger pipe. The assembly is raised about 1/2 in. per revolution and thus passes one point on the pipe surface from 20 to 40 times. The machine is adjusted so that compaction is thorough. The packer-head, which is a circular disk with rollers about 6 in. in depth and equal to the diameter of the pipe, further compacts the concrete against the mold and provides a smooth inner surface for the pipe. If the lift of the packer-head assembly is too slow, or if it revolves too fast, the inner surface of the pipe is burnt and may scale off in service. When concrete of proper consistency is employed the inner surface of the





Fig. 9: Four-inch diameter concrete sewer pipe, 3 ft. in length, with a shell thickness of only % in., manufactured on the McCracken condult machine, in Los Angeles in 1927. More than 200,000 ft. are in the stock pile shown above, and any pipe taken from the stockpile will sustain a hydrostatic pressure test, without leakage, of 100 p.s.i.

pipe will have a slight rifling and the external surface will show the characteristic web-like markings, a positive indication that sufficient water has been used in the mix to insure proper hydration of the cement. This condition is absolutely necessary for all concrete products where semi-dry consistencies are employed from the standpoint of life expectancy—durability.

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The McCracken roller-head process is similar to the packer-head, just discussed, in operation and using the same molds. The basic difference is that the concrete of semi-dry consistency is compacted in the pipe shell by rollers, Fig. 6. The solid top type roller-head is required for pipe ranging in diameters from 12 to 21 in, and the revolving blade-type, Fig. 7, for pipe 24 to 36 in. These rollerheads compact the concrete uniformly and under high pressure through 2 in. shells of 12 in. and 4 in. shells of 36-in. reinforced concrete pipe. When the molds are stripped the external surface has a smooth and uniform texture with distinct web-like markings over the entire surface and the inner surface has a slight rifling. This means that the concrete has been thoroughly compacted and has maximum strength, density and a long life expectancy.

When the concrete falls on the roller-head assembly the revolving blades throw it, by centrifugal force, into the loose material recesses between the rollers. The roller-head revolves clockwise and the blades and the rollers revolve counter clockwise because they are in contact with the compacted concrete. Thus all concrete in the recesses is compacted into the pipe shell. Concrete with a slump of about ¼ in. is required for

Make 6" to 48" CONCRETE PIPE with ONE Machine

Produce Pipe Profitably

Universal's "All-Purpose" Machine produces Concrete Pipe in all sizes from 6" to 48"—and shows you a worth-while profit. With a tamping capacity of 680 strokes per minute, your product is more dense, durable, finished in appearance. We can also outfit you for making larger sizes, up to 135".

Write today for Catalog and Details.

CONCRETE PIPE CO.

Columbus 15, Ohio



This is a thoroughly modern plant for its size. Aggregates are received and flow by gravity. The yard is paved. Curing space is under cover. And, of course, it uses "Commercial" Presteel Close-clearance Block Pallets exclusively.

Made of Commercial cored steel, Pallets are lighter in weight and designed for the individual type and size unit being made. This makes possible maximum rack storage, and maximum kiln capacity, and more uniform and quicker curing. Air can circulate fully through core openings.

Commercial Presteel Pallets FIT the machine. They produce a mortar groove in the block and a sharp edged block—at lower cost, lower investment and with less labor.

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the roller-head process, and the machine is so adjusted that the concrete is not over compacted. If that is done the surface will be too dry, scaly and may crack. With concrete of the proper consistency, it is much easier to strip the molds. More important, sufficient water is used in the concrete mixture to assure proper hydration of the cement.

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Reinforcement Assemblies

Steel reinforcement assemblies are accurately placed and maintained in pressure position in concrete pipe made by the packer-head and roller-head processes by welding spacers to the cage at proper intervals which in turn rest against the mold. Some manure with facturers roll the cage to a true circle and weld the circumferential er sur- members; the cage is then placed on means a mandrel and the longitudinal members are crimped at intervals, aximum Fig. 8, and these offsets rest against ing life the mold and maintain the cage in accurate position during manufacture. For 36-in. pipe, made by the roller-head process, the reinforcement assembly is placed in two lines or one line as an ellipse. In both cases the steel reinforcement assemblies are held in position during manufacture by welded spacers or crimped longitudinal members as previously described.

The packer-head process is especially adapted to the manufacture of concrete pipe of small diameters from 4 to 18 in. The concrete is thoroughly compacted in the thin shells required for these sizes. Four in, concrete sewer pipe in 3 ft, lengths have been commercially produced in large quantities in Los Angeles since 1926, Fig. 9. This pipe was made by a master concrete pipe foreman. Each pipe is a work of art; its dimensions are accurate, the pipe has a smooth texture inside and out and when laid into a pipe line they fit like machined castings. The shell thickness of the pipe is only % in. and all specimens will withstand internal hydraulic pressure tests, without leakage, of 100 p.s.i. and some have been tested to 150 p.s.i without leakage through this thin shell. No admixture was

In a paper entitled, "Autogenous Healing of Concrete," in 1925, Prof. Duff A. Abrams reported on the testing of five abrams reported on the testing of the fex 12-in. concrete cylinders, which at 28 days had an average compressive strength of 2382 p.s.i. in 1917. These cylinders did not fall apart and were thrown out and exposed to the weather for eight years. When retested in 1925, for eight years. When retested in 1925, the average compressive strength was 5936 p.s.l., an increase in strength of 214 percent over the initial 28-day strengths. Obviously, these cylinders were made with concrete of plastic consistency, and this is one of many examples to prove that such concrete will and does increase in strength with age because there is an abundance of mixing water to insure proper hydration of the cement. Conversely with semi-dry concrete mixtures when an insufficient amount of water is used in the mixture to insure proper hydration of the cement, the concrete will not increase in strength with age, and will usually fail in normal service, where good concrete will last indefinitely. used in the concrete; only one volume portland cement and three volumes of properly graded fine and coarse aggregate, thoroughly mixed dry for two minutes and sufficient water added-about 3.5 gal. per sack of cement and the batch mixed for two more minutes. Thus the cement was thoroughly and uniformly dispersed throughout the semi-dry concrete mixture. The pipe were made in a master mold, fitted with a semicircular secondary form, 3 ft. in length which is utilized in handling the pipe on curing racks. The pipe were cured in a saturated atmosphere, provided by water spray, for 48 hours, then yarded.

The machine-tamped process comes into its sphere of productive excellence with pipe of shell thicknesses of 1 in. or more, when there is adequate space for the tampers to function and thoroughly compact the concrete of semi-dry consistency under high pressure in uniform layers. At Brigham City, Utah, 10-in. concrete irrigation pipe have been commercially made in 4 ft. lengths with shell thicknesses of 1 in. and internal hydrostatic tests of this pipe have been made to 100 p.s.i without leakage through the shell. The concrete consists of one volume of cement and three volumes of fine and coarse aggregate.



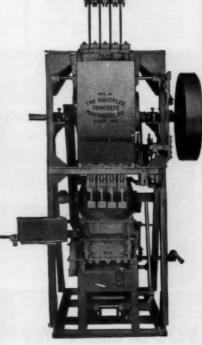
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FOR BLOCK

e Your reputation as a concrete block manufacturer is wrapped up in every block you turn out. And the best quarantee to building a lasting reputation is the assurance that your own facilities will turn out block of a uniformly high quality. The Multiplex 8-bax Standard Tamper has already helped many manufacturers build a strong reputation. It produces from three to four 8 x 8 x 18 in. units a minute. It can be used for making both plain and stripper, or face blocks, on one base. Time feeding while tamping and hopper agitation account for better units. The strike-off hopper assures a smooth top. The Multiplex Standard Tamper has a rugged. cil-steel welded frame and reinforced moldbox.



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Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

Hobbs block machines, Anchor tampers, Anchor Jr. atrippers, Stearns power strippers, Stearns Joltcrete, Stearns mixers, pallets, Strambiox Oscillating attachments, etc.

ments, etc. Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mchy. Co.

1191 Fairview Ave., Columbus 8, Ohio

Construction

(Continued from page 101)

new building may not have been a credit to concrete masonry.

One only has to recall the story of how for the want of a horseshoe nail, first the shoe, then the horse, then the general, and finally the battle was lost, to realize the importance of paying close attention to details. With details of construction available in the form of easily read drawings the builder stands for less chance of making errors of commission or omission, than if reliance is placed on spoken instructions and on his memory.

In many rural areas there is a dearth of contractors. It then becomes necessary to develop new men in this field. In farming regions there usually are many men quite dexterous in the use of builders' tools, who with proper training can soon acquire some degree of skill in laying concrete masonry walls. There is a real need for more rural builders not only now but in the postwar era when farm construction is expected to be carried on in large volume. Therefor the concrete products manufacturer can help himself both now and in the future by devoting some time to the development of rural builders who will be thoroughly familiar with concrete masonry.

The drawings (pages 100-101) are dedicated to the mission of assisting products manufacturers and builders in their desire to give the farmer the best possible concrete masonry job. The details shown in these charts apply not only to farm construction but to many other types of building and it is believed that masons and builders in urban areas can also derive much benefit from them.

Installs Curing Facilities

H. T. Ferron, Charlottesville, Va., producer of concrete products and ready mixed concrete, has installed two new 6- x 9- x 70-ft. curing rooms for low-pressure steam curing. A new overhead bin has been set up which will hold 117 tons of cinders. Mr. Ferron has plans for rebuilding his entire plant as soon as materials and equipment can be obtained.

New Concrete Market

ILLINOIS CONCRETE CRIÉ CO., Mendota, Ill., has developed a new market for concrete products, according to H. C. Rose, president. Precast concrete staves are being sold for the construction of storm cellars; three men build a storm cellar in one day. Lightweight units also are being used for barns, hog and chicken houses, and for grain storage.

The "Quinn Standard"

FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 30 years's service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quian pips forms and Quian mixing formulas combine to produce the finest concrete pipe at lowest cost.

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For making pipe by hand methods by either the wet or semi-dry processes. Built to give mere years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove er bell end pipe at lowest

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TONES-LEMLEY friction clutches are built for a broad range of shaft sizes and ratings in both enclosed and open types for sleeve and coupling work. In addition they are available in a line of Jones-Lemley friction clutch

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pulleys. This clutch modification is also used for gears, V-belt sheaves, sprocket wheels, etc. Sizes, ratings, dimensions, prices and other data are contained in Bulletin No. 60. Your request will bring a copy.



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- Manganese Steel Jaw

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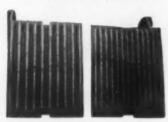
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WHEN your crusher jaws become seriously worn, don't think of throwing them on the scrap pile. Instead, save yourself the trouble of a costly replacement and an annoying shut-down by doing what one company does, — and that is to hard-face worn crusher jaws with wear-resistant Coast Metals. Here 4,900 tons of material are now being crushed, whereas formerly, with uncoated standard manganese jaws, 1,800 tons had been the limit.

Coast Metals Hard-Facing is of particular value wherever it is difficult or impossible to get new parts, or replace those which are worn out because of the heavier load and longer periods of service to which equipment today may be subjected.

Easily applied by arc or acetylene welding to surfaces, edges, points of new or old equipment of any ferrous metal. Let us tell you how Coast Metals Hard-Facing can meet your particular needs.

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Home Builders' Show

Two of the most interesting displays at the National Association of Home Builders' Exposition, held at the Sherman Hotel in Chicago, on January 15 to 19, inclusive, were those of the United States Gypsum Co., and the combined display of the Portland Cement Association and the National Concrete Masonry Association.

Concrete Masonry Exhibits

The display of the P.C.A. and the N.C.M.A. consisted of two exhibits. One display, in the upper Exposition Hall, showed several types of walls. This display included an 8-in. wall of lightweight concrete masonry, painted with portland cement paint, having rigid insulation board, plastered, part painted and part decorated with wall paper, and an inside wood trim. Another 8-in. wall showed above-grade construction with accentuated horizontal jointing, painted with portland cement paint. Also

shown was an end section of an 8-in. wall of concrete brick and 4-in. light-weight concrete masonry backup. This featured a seventh-course bonding complying with the new A.S.A. masonry code requirements. Still another type of wall was a 4-in. light-weight concrete masonry partition with accentuated horizontal joints between one 4-in. high unit and two courses of 8-in. high units. The textures were accentuated and painted to show the wide range of possibilities for architectural treatment.

A fifth type of wall was of 8-in. lightweight concrete masonry with bull-nose corner units. Above the wall display, three types of concrete floor systems were erected. One was a 6-in. Flexicore, another was concrete masonry tile, and the third was a precast concrete floor joist with 2-in. cast-in-place slab, which showed reinforcing steel in place. Three

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Concrete masonry exhibit, showing details of walls, floors and coilings and necessary reinforci



Demonstration of the four protections of modern homes using gypsum products. Revolving sto





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P&H Electrodes help you cut maintenance costs . . . avoid costly delays and equipment lay ups . . . keep machinery working longer. Build up and hard-surface worn parts—repair-weld broken ones . . . right on the job with P&H Welding Electrodes . . . to save money and time.

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can count on Hendrick High Carbon, Heat Treated Perforated Plate long after ordinary screening material becomes use-less. Heat treating of this high carbon steel assures exceptional abrasion resistance—and long-run economy!

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types of floor covering also were shown.

In the Headquarters Room, the display included 16 colored, framed photographs of low cost concrete masonry homes and six construction views of three types of newer floors with precast and prestressed steel concrete systems. Also shown were three large blowups of precast concrete floor system details including isometric drawings of the framing. Another display in this room was a section of this floor system, using the new soffit tile construction showing wood forms, reinforcing steel, and accessories for holding the steel in the beams. Also shown was a section of concrete floor used in the Fairfax Hills Housing Project in Kansas City, Kans., as well as 8- x 4-in. units made of sand and gravel, limestone. Waylite, Haydite, Celocrete, and cinders. Another exhibit was a 10-in. hollow wall section made up of two 4-in, units with steel wythes, as well as sections of cinder masonry chimney construction, showing 8- x 8- x 16-in. chimney flue lining faced with cinder units to show interchangeability for chimney construction.

Gypsum Exhibits

The display of the United States Gypsum Co. was a demonstration of materials and techniques combined into assemblies and translated into

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J. A. Ruhling of the P. C. A. explaining details of concrete masonry and floor construction

terms of what they mean in postwar building. This company also had two exhibits at the exposition. The theme of the displays was "Modern Homes Require Modern Protection." This was broken down into four items: protection against fire, protection against heat and cold, protection against vapor, and protection against noise. The display showed that gypsum is an economical and effective material with which fire losses can be stemmed

This was graphically shown in panels which were made up from information compiled by U.S.G.'s laboratory technicians.

MCLANAHAN

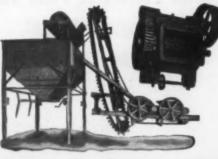
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MOST ACCESSIBLE PULVERIZER BUILT OPERATES AS PULVERIZER OR CRUSHER AS PORTABLE OR STATIONARY UNIT LOW POWER COST-LARGE CAPACITY

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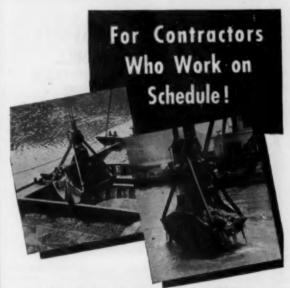
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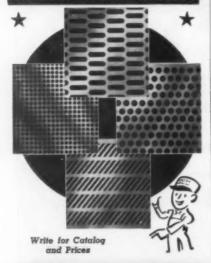
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Damage from Blasting

(Continue Crushed Stone reports from page 94)

OTHO M. GRAVES, of the General Crushed Stone Co., introduced HAR-OLD WILLIAMS, attorney from Boston, Mass., at the Tuesday morning session. Mr. Williams' paper was entitled "The Legal Aspects of Defending Suits for Alleged Damage from Blasting."

In this paper, Mr. Williams discussed the fallacy of the popular opinion that quarry blasting causes damage to houses distantly removed from the quarry. He stated that no harm can come to buildings from subterranean vibrations by blasting. He suggested that the best way to protect the quarry owner was to keep a chart of blasting operations showing the amplitude, or extent to which the blast deflects the building out of line perpendicularly, and the frequency, or rate at which the vibration occurs. This data would show accurately just what the vibration could do. If the force of the vibration were arrived at mathematically, the quarry owner would have some definite information to use in defense of suits brought against him in court. Thus, with a record of the blasts, he would have a pictorial representation of the shots which would prove that the blast could not damage nearby buildings.

Mr. Williams also mentioned test pins which were conceived by Mr. Graves of the General Crushed Stone Co. These pins, set up at various spots near the blast, show that the vibrations do not cause damage to nearby buildings, since they remain standing after the blast. While the actual force necessary to knock the pin over has not been determined. nevertheless, if any of the pins remain up after a shot, it offers proof that a chimney or building could not be damaged.

Mr. Williams also mentioned that the State Police of Connecticut have introduced special reports that the Connecticut quarry man must fill out before blasting. Thus, a means of protection is offered by keeping these reports up. In event of a suit against the quarry, Mr. Williams suggested that a competent engineer or some other practical man investigate the alleged damage to determine the damage. This man could talk the language of the jury and thereby assist in the defense. Preparation for a suit by the above means will give the quarry man a better chance in defense of his cause.

The next speaker was J. D. FACK-ENTHAL, executive vice president and counsel, New York Trap Rock Corp., who spoke on "The Negligence Factor." He mentioned the various legal aspects in which suit could be

(Continued on page 124)

"PENNSYLVANIA" REVERSIBLE HAMMERMILL



This modern "PENNSYLVANIA" REVERSIBLE displaced a well known Hammermill of another make. Crushes 300 T.P.H. of hard Hudson River Cement Rock.

Because of their better technique, "two-way" REVERSIBLES have almost completely replaced the older "one-way" vania" Hammermills.

In this modern 2-stage design, the heavy primary crushing is against a series of powerful Manganese Steel Anvils. Adjustable duplex Cages for both right and left-hand rotation-no "Hammer Turning"—oversize SKF Roller Bearings—rugged STEELBUILT construction—unusual accessibility. Capacities 10 to 600 T.P.H. Patented. Bulletin No. 1030.

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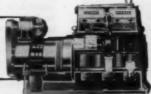
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Male **111111** Female Threads Recognized Universally as the ULTIMATE in Valves and Couplings KNOX MANUFACTURING CO. 818 CHERRY ST., PHILA. 7, PA. Since 1911 Producers of

brought against a quarry in blasting. They are: (1) trespass, (2) nuisance, (3) reciprocal rights of land owners, and (4) negligence. He elaborated on the meaning of the various terms and stated that different States gave different interpretations to the law in this respect. Mr. Fackenthal mentioned several instances where the courts of different States gave various interpretations to alleged damage inflicted by quarry blasting.

M. GLENN FOLGER, member, New York State Bar, also spoke on quarry blasting. He upheld the statements made by the two previous speakers and suggested a campaign of education for the general public to show the relatively small vibrations that occur in a blast. He said that the future of litigation is difficult in view of the decision rendered by the New York Court in the case of New York Trap Rock vs. Dixon. He stated that the witnesses for the plaintiff in this case were not clear in proving that the cracks in the building were caused by blasting. He was emphatic in stating that the general public should be educated to the fact that quarry blasting does not do the damage that is believed at the present. He said that competent and efficient claim departments should be organized to handle these cases and settle claims out of court whenever

Asphaltic Pavements

Bernard E. Gray, general man widened ager-chief engineer, The Asphalt In ment of stitute, New York City, read a paper structed on "Trends in Asphaltic Pavements," ment. Wednesday, January 31.

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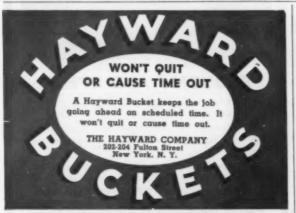
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period, Mr. Gray stated that there have used no been a number of developments during the war which will exert a profound influence on future paving dams, operations in the United States. He revettir said that there is a trend towards the greater use of plant-mix, but last, pl uses. 1 that this is merely a trend, and the work which will be accomplished by road-mixing and surface-treatment few ye operations will continue to be of large volume for many years to come.

In addition to the use of asphalt for maintenance, there is a need for its use in reconstructing a large part of our primary road system. Much of this work will be accomplished with plant-mix types of asphalt mixtures because of the advantages afforded by such procedure. Along with resurfacing the old pavement, there will be a need, in many cases, for widening at the same time. One of the problems formerly encountered in widening work was to prevent settlement, but special roller equipment is now available which is able to compact even a 1 ft. wide strip so that when resurfacing is placed over both the old pavement and the



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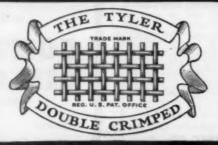
ifficult separations. UNI-versales are of rugged yet simple construction, lowest in first cost and in main-cenance. UNIVERSALS have been tried and proved in 25



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Trade Mark of ACCURATE, DEPENDABLE WIRE SCREENS







THE W. S. TYLER COMPANY, Cleveland 14, Ohio

man widened area, the completed pave-nent will be maintained, as con-a paper structed, without differential settlement.

ments," Mr. Gray said that in the postwar period, asphaltic concrete will be e have used not only in highway resurfacts during, but also in the construction of a proheavy-duty highways, for facing of paving dams, lining of storage reservoirs, tes. He revetting of river banks, construction owards of jetties; stabilizing of railroad bal-ix, but ast, plus a great number of smaller and the uses. Mr. Gray stated that while thed by asphalt pavements in the past have atment seldom been over 3 in. thick, the next atment few years will see asphaltic concrete be of o come pavements of 6-in. thickness. Deasphalt wit the acceptance which permit the coating of wet aggregates eed for with asphalt so that the film or ge part binder cannot be removed under the Much most adverse conditions is another plished improvement. It mix-

Specifications, which have remained the same for many years, ng with will have to be rewritten, Mr. Gray , there stated. He said that it was several years before specifications were even partially altered to meet the new construction conditions. In fact, many untered public agencies today use the same specifications they did twenty years

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morning session of the National Crushed Stone Association convention. He introduced Charles E. Wuerpel, engineer-in-charge, Central Concrete Laboratory, U. S. Corps of Engineers, who spoke on the subject, "Durability of Concrete."

Mr. Wuerpel discussed the results of tests made to determine the advantages of Vinsol resin cements in concrete, particularly with reference to durability. In his opinion, air-entraining cement is one of the greatest developments to date in concrete technology. A more complete report on Mr. Wuerpel's interesting talk will appear in a later issue.

Agricultural Limestone

FEARS THAT A PEAK in agricultural limestone consumption has been reached were proved groundless at the session for limestone producers of the National Crushed Stone Association in New York City, January 30. Estimates by the Agricultural Adjustment Agency show requirements for this year—1945—to be over 51 million tons, of which the A.A.A. expects to supply only 16 mil-

This subject is of such vital interest to the crushed stone industry that the reports covering agricultural limestone will be published in the April issue of Rock Products which will feature this phase of the industry's operations.



The Service Record of this wire rope continues to make and hold friends.

MADE ONLY BY A. LESCHEN & SONS ROPE CO.

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They require very little power to operate. And they feature the exclusive GAYCO principle of rejecting course particles by means of a centrifugal sixing fam. They separate 95% through 325 mesh, and give 35% to 30% greater recovery of fines.

e Manufacturers also of "Reliance" crushers. Screens. Elevators. Conveyors. B in Gates. Griszlies. Complete crushing, screening, and washing plants for crushed stone, sand and gravel.

Universal Road Machinery Co.

RUBERT M. GAY DIVISION 117 Liberty St. New York 8, N. Y. Canadian Representative: F. H. Hopkins & Co., Ltd., Montreal FACTORY & LABORATORY, KINGSTON, N. Y.

REDUCING COST OF MOVING MATERIAL



Sauerman Scraper stores and reclaims wet phosphate rock at drying plant.

THERE is three-fold economy in using a Sauerman Power Scraper or Slack-line Cableway for digging and hauling or stockpiling.

First cost of a Sauerman machine is moderate, operation is an easy oneman job and upkeep is simple.

Sauerman engineers will gladly study your material-handling problems. Their advice may save you money and will be given free.

SAUERMAN BROS., INC.

530 S. Clinton St., Chicago 7, Illinois

SAUERMAN LONG RANGE MACHINES

Refractories

(Continued from page 53)

to fill a small space, where the lining meets a chain holding plate or block, but the brick should not be cut down to form a very narrow ring in order to fill this space. It is preferable to also cut the adjoining ring so as to have two rings of average mechanical strength, rather than to have one ring of doubtful mechanical strength.

Rotary kiln blocks are laid dry and after they have been installed the entire lining should be grouted with an air-setting refractory cement.

Fig. 13 showing thermal expansion curves for steel, portland cement and various types of refractories is included for the interest it can have in connection with the installations of linings in rotary kilns. Due to the fact that steel expands at a greater rate than the refractory, it has seemed best to lay the linings as tightly as possible, without provision for expansion; this applying to the fireclay brick and high-alumina brick linings. With the basic brick, it is necessary to provide for expansion longitudinally, as has been determined by numerous experiences.

The rather high thermal expansion of portland cement, accounts for the fact that it is better to grout a lining laid dry with a suitable airsetting refractory cement. With any appreciable amount of portland ce-

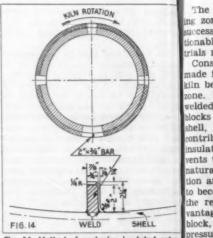


Fig. 14: Method of anchoring insulated rotary kiln lining

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ment in the joints, as is obvious, the expansion differential at the face of the brick can be great enough to cause some pinching, which is interpreted as a kind of spalling.

The basic brick linings are laid with steel sheets, which contribute greatly to their successful use in this application. The installation of these types of refractories is somewhat specialized and, for an initial lining of a high temperature zone, the manufacturer is eager to assist in the supervision.

TRUXMORE WORLD'S BEST 3RD AXLE

CARRIES two payloads in one.

SAVES in first cost (up to 40%), on insurance (up to 50%), fuel costs (up to 20%), tires (50% to 100% longer life), road time (up to 20%), breakage of fragile loads, license fees, dead weight, maintenance costs.

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PLYMOUTH LOCOMOTIVES

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"WIRE SCREENS? SURE BILL—BUY 'CLEVELAND'-WE DO!"

Tough, Durable, Accurate Wire Screens for Vibrators or Rotary Jackets

Cleveland is the "Buy" Word of Quality

THE CLEVELAND WIRE CLOTH & MFG. CO.

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CLEVELAND, OHIO

The use of insulation in the burning zone with the desired degree of success still remains somewhat questionable, and more research and trials must be made.

Considerable progress has been made in the use of insulation in the kiln beyond the highest temperature zone. The use of a retaining bar welded longitudinally, to hold two blocks extending through to the shell, as illustrated by Fig. 14 has contributed greatly to the success of insulation. This retaining bar prevents the lining from shifting which naturally would abrade the insulation and allow the lining as a whole to become loose. The two blocks and the retaining bar have definite advantages over the use of a single block, which because of excessive pressure imposed upon it tends to crack and pinch off at the face. The solid rings at 10-ft. intervals through ous, the to the shell have also proved very helpful in prolonging the life of ap insulated section.

OBITUARIES

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CHARLES GORDON ADAMS, operations manager of Basic Refractories, Inc., l lining Cleveland, Ohio, died suddenly February 12 at his home in Tiffin, Ohio. ssist in He was 43 years old. Mr. Adams joined the company in 1934 and had been manager of the dolomite quarry and refractories plants at Maple Grove and Bettsville, Ohio. He was made operations manager two years ago and has since directed all the company's manufacturing operations. He was well known in the quarry and rock products industry.

> LAWRENCE LYMAN SNOUFFER, president of J. & L. Snouffer, Inc., quarry operators at Dublin, Ohio, died recently at his winter home in Naples, Fla. He was 52 years of age. Mr. Snouffer had been president of the company since it was incorporated 20 years ago.

OTTO W. LUIZ, formerly vice-president of the Lutz Sand and Gravel Co., Milwaukee, Wis., and recently superintendent of material handling for the United States Rubber Co., division of the former Milwaukee Ordnance plant, died January 29. He was 57 years old. Mr. Lutz retired last April because of ill health.

ALBERT A. KREEB, district manager, U. S. Gypsum Co., Owensboro, Ky., died recently after a brief illness. He was 27 years old.

BURL VANCE HEDRICK, owner and president of the B. V. Hedrick Sand and Gravel Co., Lilesville, N. C., died recently at the age of 68.

VILBERT BIVINS, president of the National Pulverizing Co., Millville, N. J., passed away recently at the

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The Handiest Fastener Made

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Only a hammer is needed to apply Talcott Fasieners.

Conveyor view of one of many plants that has standardized on Talcott Fasteners for their convevor belting.

TALCOTT CONVEYOR
BELT FARTENERS—Made
in short sections which allow
the belt its full pliability so
it will readily conform to the
trough idders and also will
run smoothly under trippers,
scrapers and on tandem

TALCOTT CLINCHING
FASTENERIS—For all heavy
transmission and elevator
beiting. Backs of fasteners
are made extra strong to
withstand most severe strain.
The testh piece between threate of the warp of the
best, perventing belt's from
breaking at the joint.

A Fastener for Every Belt

W. O. & M. W. TALCOTT, INC. 92 SABIN STREET . PROVIDENCE, R. I.



The Service

Record of AMERICAN CRUSHERS was an outstanding one years before the War started. Now, during the war years, they have continued to make good their reputation with maximum reduction efficiency, free from costly shutdowns for maintenance.

AMERICAN PULVERIZER CO.

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SIMPLICITY in design and operation assures continuity of service. so important today.

STURDINESS in construction-Extra heavy construction, built to withstand the most severe service.

EXCEPTIONAL operating characteristics—Anti-friction bearings, Patented Adjustable Grinding Plate, metal trap, manganese steel grinding parts, and the original American Hammer



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ROCK PRODUCTS OPERATORS

- steels
- · Internally lubricated
- · Made by craftsmen with years of experience
- . . . the CORRECT Rope for your equipment

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age of 70. Mr. Bivins who was well known in the sand industry, was associated in business with Clarence Wolf, president of the New Jersey Silica Sand Co.

CHARLES HERR, secretary-treasurer of the Tell City Sand and Gravel Co., Tell City, Ind., passed away recently at the age of 79.

F. A. HOEFER, president of the Southern Silica, Mining and Manufacturing Co., Columbia, S. C., died recently. He was 70 years old.

J. BERNARD McCABE, sales engineer with the North American Refractories Co., Clevelnd, Ohio, died January 10 at the age of 54.

New Incorporations

LaSalle Silica Co., Ottawa, Ill., has been incorporated to mine, quarry, excavate, remove, process, refine, prepare, buy, sell, transport and generally deal in sand, silicransport and generally detail in sand, shifted, gravel, stone, rock, clay and coal. Capital 1000 shares with a par value of \$100. Incorporators are Walter C. Greene, M. G. Lettola, and John W. Cavanaugh. Correspondent is McDermott, Will & Emery, 111 W. Monroe St., Chicago, Ill.

Brooks Ready Mixed Concrete Co., Paterson, N. J., has been incorporated with a capital of 2500 shares. Peter Cohn is the agent.

Farmers Concrete Products, Orangeburg, S. C., has been organized for the purpose of manufacturing and selling concrete products. Capital stock, \$50,000.

Officers are J. F. Cleckley, president and treasurer; H. A. McGee, Jr., vice-presi-dent; W. R. Baldwin, secretary.

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Manufacturers' News

Gardner-Denver Co., Quincy, Ill., announces that Gilbert H. Gaus has been appointed manager of the New York branch office. He succeeds G. V. Leece, vice-president, who has been placed in charge of the company's export division.

The Timken Roller Bearing Co., Canton, Ohio, has announced the appointment of Everett C. Hite as combustion and refractories engineer in the Steel Mill Metallurgical Department.

Hercules Powder Co., Wilmington, Del., has announced the retirement of Charles C. Hoopes and George M. Norman, directors and members of the finance committee; both had 32 years' service with the company. The two vacancies have been filled by Ralph B. McKinney, gen-eral manager of the paper makers chem-ical department and Dr. Wyly M. Billing, general manager of the synthetics department

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has announced the appointment of U. E. Sandelin as manager of the Seattle, Wash., district office, succeeding A. J. Schmitz, who has been named Pacific regional manager.

American Brake Shoe Co., New York, N. Y., has appointed T. W. Pettus presi-dent of the National Bearing Division of the company. Mr. Pettus has been executive vice-president of the National Bearing Metals Corp., which was recently merged with the American Brake Shoe Company as a division of the company.

General Electric Co., Schenectady, N. Y., announces the election of Ralph J. Cordiner as vice-president and assistant to the president. Mr. Cordiner has been



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SWING HAMMER PULVERIZER

Its wide crushing range makes it serve the purpose of two purpose of two more other types crushers. Rolles bearing equipped Write for Bulletin.

Brooks EQUIPMENT & MFG. CO

RUBBER PRODUCTS

BELTING Convayor, Elevator, Compensated, Transmission, Agri-cultural and V-Belts. Belting for every Service.

HOSE Air, Acid. Confrac-tors, Fire. Hydraulic. Oil and Sasoline. Steam. Sand Blast. Suction, Water. Spray and Special Hose. 81 Kinds for 81 Uses.

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Chute Lining, Molded Rubber Goods, Industrial Brake Blacks and Lining, Rubber Lined Tanks, Rubber Cov-ered Rolls—Abrasive Wheels, Bowling Balls.

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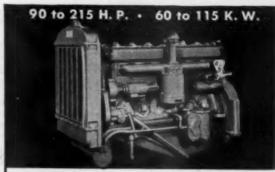
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ELEVATOR BUCKETS

Standard designs or special buckets to your order. Skilled service in a well-equipped plant specializing in replacement buckets. Welded or riveted con-struction. Sizes up to 42" long, ¼" steel. Large or small orders given prompt and individual attention. Write for our

STANDARD METAL MFG. COMPANY MALINTA,



MURPHY DIESEL COMPANY 5315 W. Burnham St., Milwaukee 14, Wis.

assistant to the president for the past 18 months, since his resignation as vice-chairman of the War Production Board. Ballionthis, since his tesignation as vice chairman of the War Production Board. Barber-Greene Co., Aurora, Ili., has announced that Lt. Col. C. B. (Cliff) Gould, for many years manager of the Detroit office, has recently been released from the Army Air Corps, and has again assumed duties with the company in his previous capacity, with headquarters at 25 E. Seven Mile Road, Detroit, Mich. Jaeger Machine Co., Columbus, Ohio, has appointed O. G. Mandt president of the company. For the past 17 years Mr. Mandt was vice-president and general manager. Gebhard Jaeger, for-

hard Jaeger, for-mer president, was elected chairman of the board, and R. McLean was named first vice-president in charge of sales. Entering the construction industry in 1906 as a manufacturer of elected chairman tilting concrete mixers, The Jaeger Machine Company has expanded to

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has expanded to become one of the largest manufacurers of contractors' pumps, various types of mixers, truck mixers and road spreading and finishing machines.

Link-Belt Speeder Corp., Chicago, Ill., announces the appointment of Harold F. Allen as chief engineer to succeed H. N. Ekbom, who is being transferred to the engineering division of the Link-Belt Co. Mack Trucks, Inc., New York, N. Y., has appointed Willard Walker, vice-president of Mack-International Motor Truck Corp., to the managerial post of the Greater New York Division.

The Timken Roller Bearing Co., Canton, Ohio, has appointed John J. Yezbak manager of the newly-created public re-

ady, N. alph J. ssistant as been

nanager of the newly-created public reations department

PULVERIZERS for the reduction of Cement Materials, Limestone, Agricultural Limestone, Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour

Finenesses: 20 to 350 mesh

ALLENTOWN, PENNA.

To Increase Capacities or Fineness of Present Grinding Plant-

To Reduce Power and Maintenance Costs-

To Insure an Absolutely Uniform Product-

Use the BRADLEY AIR SEPARATOR



A DOUBLE IMPELLER CRUSHER

New Holland Model 3030

* Its astonishing efficiency reduces material from 30 in. to an optional minimum of 80% under one inch in one operation. Handles 100 to 150 tons per hr. with only 50 to 75 hp. For portable or stationary units. Combines expensive primary and secondary machinery in one operation. Write today for complete details on this new machine which operates on a new basic principle. Address Department RF-11.

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3'-0" x 30'-0" Christie Dryer 5'-0" x 40'-0" Kiln.

McDERMOTT BROS. COMPANY Allentown, Pennsylvania

-ton per hour Clyde Hydrator. 8-ton per hour Clyde Hydrator, -10-ton per hour Clyde Hydrator. These Hydrators are being rebuilt at the present moment and are for sale first come first served; these will include when sold the Kuntz Dust Con-

> LIME & HYDRATE PLANTS CO. York, Pennsylvania

GOOD VALUES-ALWAYS

4' Symons Coarse Bewl Cone Crusher, 1x18" and 36x18" American Pulverfuers, Vd. Williams Clambell digging bucket, 4; 74 P&H Gas Crane and Dragline of ft. also 3006 ft. Air Compressors, 10 to 1296 HP Diesel Power Plants.

MISSISSIPPI VALLEY EQUIPMENT CO. 5 Locust St. St. Louis 1, Mo. 515 Locust St.

FOR SALE

- l Williams No. 6 Jumbo Hammermill.

 1 Asphalt Travel Plant, 50 to 75 tons per hour.

 1 WXC-3 Hercules gasoline motor.

 1 Monarch 75 Caterpillar Tractor with power take-off.
- off.
 2 Brooks 116 eu. yd. load luggers with 13 buckets.

HARTONG AND COMPANY 33 N. La Salle St. Chicago 2, III.

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Two-yard late model Jaeger Hi dump Transit Mixer mounted on 1941 Ford Truck.

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2594 N. Water St. Decatur, III.

FOR SALE

Guaranteed used Steel Pipe and Boiler Tubes Wood and Steel Tanks Buildings, Valves and Fittings

JOS. GREENSPON'S SON PIPE CORP. Natl. Stock Yds., St. Clair Co., III.

BELTED: 355, 538, 676, 1000, 1300 & 1570 Ft.
ELECTRIC: 478, 676, 507, 1308, 1722 & 2200 Ft.
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PORTABLE GAS: 110, 160, 220, 310, 540 & 1300 Ft.
STEAM: 49, 310, 522, 1300, 2200 & 3600 Ft.
CLAMSHELL BUCKET GROUPS & GRAPPLES
2 VG. OWEN Type S Malerial Handling.
1% YG., 1 YG. 4% YG. HAYWARD Class E.
18 Steel Shipe 6% 12 8 7 36.
5 Ton Bucytus Bock Grabs.

CRANES AND DRAGLINES 1-16 Yd. erpillar Drag-

CATERPILLAR SHOVELS

2 Yd. Marion Steam Showl. Yd. Marion Steam Showl. Yd. Marion Steam Showl. Yd. A Yd. & Yd. & Yd. MARION Electrics 1 Yd. NORTHWEST Gas.
1% Yd. LIMA Dissect B Steamer.
4 Yd. Burrus 120B Electric. Also 3 yd. Eric Elec.
5 Yd. P & H Model 1500 Elec.

5 Nd. F & H MOGGE 1590 FISC.

DUMP CARS
46—KOPPEL, 1% Td. 24 & 39 In. Ga., V Shaped.
15—3 Yd. 3 Yd., 4 Yd., 6 Yd. 12 Yd., 36 In. Ga.
20—84d, Ga. 13 Yd., 16 Yd., 30 Yd. & 30 Yd. Cap.
15—84d, Ga. 50 Ton Battleship Gondolas.

BOX, FLAT & TANK CARS

9-50 ton std. ga. heavy dut 30-8000 gal. cap. tank cars. 30-40 ton std. ga. box cars duty flat cars.

HOISTING ENGINES
Gas: 15, 30, 60, 100 & 120 HP.
Electric: 20, 52, 80, 100 & 150 HP.
Steam: 6%x8, 7x10, 8%x10, 10x12, 12x24.

DIESEL UNITS
75, 90, 180, 200 HP. F. M. Engines.
175 KVA Worthington 3/60/2300.
275 KVA Fairbanks 3/60/2300.
343 KW, Fairbanks Mores 3/60/480

333 AW, PRIGRAMS-BUTTS 5709/50V T.

5'x22" HARL, ROD AND TUBE MILLS
5'x22" HARDINGE CON. Dry Ball Mill.
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4x8, 8x8 & 1029 Straight Ball Mills.
4x16, 5x18 & 5x23 Tube Mills & 6'x22',
3'4x8 & 5x7 Air Swept Tube Mills.
2x4%, 6x12 & 5x12 ROD MILLS.

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JEFFERY, 2:20 & No. 1 Sturtevant Ring Roll.

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10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.

SEPARATORS AND COLLECTORS
8, 10 and 14 ft. Separators, Cavco & Bradley.
ROLL CRUSHERS
36x60 Fairmount & 36x20 Diamond.

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ORIG. 30X39, 42X9, 40X24, 48X35, 50X62, 54X56, 36X16, 9X36 & GYRATORY CRUSHERS

5 No. 19, 25, 37 & 49 Kennedy.
18 in. 24 in., 26 in., 38 in. & 48 in. Symons Disc.
4—10 7Z Traylor 4 ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory. also 16 inch
17 Gates K.—Nos. 5, 4, 5, 6, 746, 8, 9% & 21,
7—Symons Cose. 2, 2, 5% and 7 it.
6, 10 & 13 Inch Superior McCullys.
CONVEVOR PARTS

BELT: 1000 Ft. 60 in., 700 Ft. 40 in., 500 Ft. 36 in.,
200 Ft. 30 in., 142 Ft. 24 in., 517 Ft. 20 in.,
207 Ff. 18 in., 500 Ft. 16 in., 200 Ft. 14 in.
1DLERES 5 in., 43 in., 56 in., 20 in., 30 in., 31 in.
1DLERES 5 in., 43 in., 56 in., 30 in., 30 in., 51 in.
1Hoad & Tail—Pullows—Takeup for all close.
Steel Praims 2, 200 Ft. 26 in., 30 in., 30 in., 50 tin.

Steel Frames: 2,000 Ft. 28 In., 30 In. & 36 In. Sections
ROTARY DRYERS AND KIANS
36 In.x20 Ft., 8 Ft.x30 Ft., 4 Ft.x30 Ft., 54 In.
x30 Ft., 8 Ft.x40 Ft., 4 Ft.x30 Ft., 54 In.
250 Ft.x0 Ft., 6 Ft.x00 Ft., 6 Ft.x20 Ft.,
6 Ft.x10 Ft., 10x30, 7\(\frac{1}{2}\)x100 Ft., 5 Ft.x20 Ft.,
6 Ft.x10 Ft., 10x30, 7\(\frac{1}{2}\)x100 Ft., 6 Ft.x20 Ft.,
6 Ft.x10 Ft., 10x30, 7\(\frac{1}{2}\)x100 Ft. Som.
30 Text 15 Ft. Boom. 15 Ton 100 Ft. Boom.
30 Text 15 Ft. Boom. 15 Ton 100 Ft. Boom.
31 Ff. L60: 5 Ton 70 Ft. Boom. 15 Ton 100 Ft.
Boom. 25 Ton 100 Ft. Boom. 15 Ton 105 Ft. Boom.

LOCOMOTIVES
GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14, and 30 Ton, STEAM: 9 Ton, 30 Ton, 40 Ton, 60 Ton & 80 Ton, electric: 2 Ton, 5 Ton, 5 Ton, 40 Ton.
DIESEL: 4, 8 & 15 Ton.

DIESEL: 4, 5 & 15 TON.

SCHEEN
**VIBRATING: 3x4, 3x6, 12x5, 3x8, 3x5, 4x5, 4x8, 4x10, 4x10, 4x12, 1, 2 & 5 Deck.
**HUMMER ROTEX, NIAGARA & ROBINS, REVOLVING: 3x12, 3x16, 34x18, 3x24, 4x16, 4x20, 4x23, 4x28, 5x20, 5x20, 5x20,

R. C. STANHOPE, INC.
COMPLETE PLANTS BOUGHT AND SO
60 East 42md Street NEW YORK 17, N. Y.

24x36 CRUSHER

bearing jaw crusher, 1942 model, with extra set jaws.

0 h.p. 3ph 60c 220/440v Westinghouse m
and V-balt drive.

CONSTRUCTION EQUIPMENT CORPORATION 2402 W. Clybourn St., Milwaukee 3, Wis.

READY MIX TRUCKS

6-1% Yd. Model 3215. Practically New, Concrete Transport Mixer's Co. Open top Mixers with power take off

2-11/2 Yd. Blaw Knox Mixers, Horizontal Drum Type.

All, except one, mounted on 1940 Ford Chassis, Tires newly retreads, 34x7-10 ply Dual Rear, 32x6-10 ply front. Two speed Axle. Overload springs and Reinforced frame,

-"AS IS"-\$1637.00 Each, F.O.B. Memphis, Tenn.

FISCHER LIME & CEMENT CO.

Memphis, Tennessee

1,750—12 x 16 Reg. 45% Close Clearance Pallets © 55c cach (Almost New)... \$92,50 3,000—5 x 24 Malleable from Chose Clear-ance Pallets © 45c cach (Almost New) 1,350,00 1—3 x 8 x 25 Jolicrete Mould Box (Al-most New) ... 400,00 40—72 Block Backs. 1 year old. @ \$25 ach ... 1,000.00 each (New)
1,000—4 x 14 Cast Iron Pallets @ 20e 100.00 20.00 1-Jolterete Drive Motor for No. 9 Ma-189.00 -Anchor -- 3 x 8 x 16 Mould Box, Almost New, with Lifting Rods and Tamp

All this equipment is subject to prior sale.

Write Box C-32, c/ Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

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Will sell separately. Will sell separately.

1—Anchor Tamper, Power Feed.

1—Hobbs Facedown Machine.

1—Blystone Stripper Plain, 4, 6, 8, 12 inch.

10,000—4, 6, 8, 12 inch Pallets, Cast Iron and Steel, 2 and 3 hole

A Complete Plant Layout. Sold only as a com-plete unit which includes: Mixer; Skip Hoist; preta unit with includes: alice; and proba-Extension Hopper; Besser K No. 3 Tamper; Front Conveyor; Air Hoist; Air Compressor; Approx. 3,500 Plain Pallets; 20 Racks; 2 Transfer Carts; 8" Attachment; 12" Attachment.

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2-4-ton Vulcan Gasoline Locomotives, 45" gauge; fair condition.

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3500 ft .- 45 lb. and 60 lb. R. R. Rail.

22-Quarry Rock Cars (45" gauge) (ten cars good condition; twelve cars can be repaired).

CHAZY LIME & STONE CO., INC. Chazy, New York

MISCELLANEOUS

Traylor 30

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Portable with EU x 26

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Traylor I genera
3' x 12' with volt,

x 12' ; with 2 x 12' 1 220-44 deck.

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1---20 ga

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1-57

2-67

2-78

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MISCELLAHEOUS

Chicago NSB air compressor, 14*x12", 529 CFM.
National double drum 35 hp electric hoist.
Sauerman double drum 56 hp electric dragline.
N. Y. Air Brake 6B Duplex steam air compresso
Worm drive speed reducers. 50-1, 78-1.
Electric motors, 1 to 190 hp.
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Ellicot 4" hellaclese lined and pump.
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4 and 8 ton gasoline locomotives.
24" flat and V shapsed cars.
400 hp V belt double pulley unit with belt.
Waukesha 4 cyl. engine with speed reducer.
3 steel pontoons, 4'x4'x14', '4," plate.

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1990' 48" x 8 ply conveyor belt, prewar. Belt conveyors, pulleys, idiers and belt. Sandrik 24"x86" steel belt conveyor.

Jeffray Foundry maid type conveyor, 42"x150'. Steel plate conveyor, 4"x28".

Link-Belt single flight conveyor, 13"x56'. Haiss portable belt conveyor, 14"x26".

Belt trippers for 14", 16" and 18" belt. Weller 36" sattomathe horizontal belt take-up, Screw take-ups for belt conveyor, 12" to 12'. New and used conveyor belt.

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GYREX double deck 4'x16' vibrating screen. Simplicity three deck 3'x6' vibrating screen Leahy single deck 4'x10' double vibrating. Plat-0 single deck 3'x6' vibrating screen. Jugger three deck 2'x5' vibrating screen. Hummer single deck 3'x5' vibrating screen. Hummer single deck 3'x5' vibrating screen. 15 crols generators for hummer screens. Revolving Screens: 4'x16', 4'x2x', 5'x18'

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Buchana 147.50° C double roll crunher.

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Buchanan 16"x16" Blake type jaw crusher.

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Sturievant No. 9 Rotary Fine Crusher.

Williams No. 2 hammermill.

Midwest No. 2 hammermill.

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Single roll coal crusher, 24"x30".

Single roll coal crusher, 24"x30".

Single roll coal crusher, 31" bearings.

8 tons steel crushing balls, 1" to 2".

American Standard 24" disintegrator.

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Bucket elevators, 16°, 18°, 29° on chain and belt.
50° elevator, 8° malleable buckets on belt.
Continuous 14°535° bucket elevator on chain.
Continuous 14°535° bucket elevator on chain.
Continuous 30°546° bucket elevator on belt.
Continuous 30°546° bucket elevator, double chain.
Grain elevators, 5° to 18° buckets on belt.
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20° Norce No. 1130 Rollec chain with attach.
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21° Anne So. 21° with R.2, 40° No. 833 with A-42° attach. atlach.
600' Brarts No. 124, 300' 40 roller chain.
Selected chain sprockets, new and used.
New malleable elevator buckets, 20"28"-AA.

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Five Allis-Chalmers tube mills 5'x22", chilled iron liners, steel heads, good condition.

KOSMOS PORTLAND CEMENT CO.

1529 Storks Bidg.

Louisville 2, Kentucky

4 Jeffrey-Traylor No. 4 Vibrating Pan Feeders, two never used, two only slightly.

36" Traylor TZ Gyratory Crusher, belt drive.
No. 2 Williams Jumbo Jr. Pulverizer, rebuilt.
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12"x38" Cathanan Jaw Crusher.

14"x38" Cedar Rapids Jaw Crusher.

14"x38" McLanahan Single Boll Crusher.

21"x42" McLanahan Single Boll Crusher.

21"x42" McLanahan Single Boll Crusher.

4"x3" Hardinge Pebble Mill. New lining, Pebbles.

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Barber Greena Models 42 and 62 Buckst Loader.

½ yard Orton Crane, 4" boom.

½ yard General Shovel & Dragline Comb.

18"x40" and 56" Belt Conveyors.

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210 and 300 HP Fairbanks Morae Diesel Engines.

1½ and 2 yd. Brooks Load Luggers.

Four 24"x18" Lewistown Serew Sand Washers.

MID-CONTINENT EQUIPMENT CO. 710 Eastgate Pa 2290 St. Louis 5, Me.

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JAW CRUSHERS

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Feeders frive. ebuilt. n crusher.

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Traylor 36 x 42 and Farrel 24 x 36, with or with-

REDUCTION CRUSHER

Traylor 4 ft. type TY with or without motor and V-belt drive.

CRUSHING PLANT

Portable Stone Crushing or Sand & Gravel Plant with 9 x 36 roller bearing Jaw Crusher and 20 x 26 roller bearing Roll Crusher, etc.

DIESEL ENGINE

0 H.P., 6 cylinder, 8 x 10½, solid injection, cylinder liners, V-belt pulley, weight about 20,000 lbs. New condition, bargain.

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Two stage Centrifugal, high speed, ball bearing, direct to 339 H.P., 2300 voit, 3 phase, 60 cycle, cap. 1070 GPM @ 1000 ft., with across-the-line starters.

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Traylor FB-4 Vibrator Screen size 47" x 84" with

x 12' Symons Vibrating single deck Screen with 5 H.P. Allis Chalmers motor, 220-440 voit, 1160 RPM.

x 12' single deck, model B, Simplicity Screen with 7 1/2 H.P. motor, 220-440 volt, 1200 RPM. 1' x 12' Symons Vibrating Screen with 7\% H.P., 220-440 volt, G.E. meter, 1200 RPM, single deck.

5' x 7' Robins Eliptex, single deck.

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Bucyrus Erie 44-B Diesel, 2 yd. capacity.

Marion 3 yd. electric, model 482, with Ward
Leonard control. Now condition.

Marion 4 yd. electric, model 4160, full revolving,
crawler tread, Ward Leonard control equipment, late type crawlers; perfect condition.

Located in Minneson.

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pd. Electric Dragline, 110' boom, 2200 volt. A. C.

Monighan Walker Draglino 5 yd. capacity, diesel powered, 70' boom, also, 3 yd. Page bucket.

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Sauerman 1% yd. Crescent, heavy duty. New condition

MINE HOIST

tumws 600 H.P., drum 96" dia., 118" face, complete with all auxiliary equipment; thoroughly modern, new condition; 2200 volt, A.C.

TRACK SHIFTER

edberg model N, standard gauge, powered with Hercules gas motor.

CRUSHERS, GYRATORY CRUSHERS, LI. CRUSHERS, DRYERS & KILNS, HOISTS, CARS, CRANES, SHOVELS, ETC.

WE WILL BUY ANY MODERN PIECE OF EQUIPMENT ANYWHERE.

A. J. O'NEILL

Lansdowne Theatre Building Lansdowne, Pa.

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1-20-ton Plymouth standard gauge gasoline.

1-20-ton Whitcomb diesel 36" gauge. -57-ton Baldwin type 0-6-0 stand-ard gauge saddle tank.

-67-ton American type 0-6-0 stand-ard gauge separate tenders.

2-78-ton Baldwin type 0-6-0 stand-ard gauge side tanks.

B. M. WEISS COMPANY

Girard Trust Co. Bldg., Philadelphia 2, Pa.



LOCOMOTIVE

-15-ton Vulcan std. ga. gaso-line locomotive, No. 3903, with link and pin couplings, also special M.C.B. attach-

AIR COMPRESSORS

Portable and stationary, belt with eige. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

ELECTRIC CRANE

1—18 tom 0. & S. Type B CRANE, mtd. on 8' 0" ga. track, 50' boom. Power 52 HP 440/60/8 elect. mtr.

CRUSHES

440/60/3 elect, mir.

CRUSHERS

No. 2 Climax jaw crusber, sise 9x10".

-Acme jaw crusber, Ser. No. 1873, aine 12x20".

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-No. 3 Champion jaw crusber, 1892, 1893, 1892, 1893, 189

number of wood stiff leg derricks, I to 5-ton cap. HOISTS (Elect., Gus, Steam)

85—Electric, ranging from 20 HP, up to 125 HP., consisting of triple-drum, double-drum and single-drum, with AC es DC motors, some with attached swingers. Following makes: American, Ciyde, Lambert, Lidgerwood and National.

An employer who buys "main, strength and awkwardness" is a loser. The modern, profitable way is to see that employees have the most suitable equipment to do the job the easy way. Get it from E.C.A.

Gas holsts ranging from 8 to 129 HP., single, double and triple-drum; all standard makes (38 in stock); Steam, ranging from 8 HP, to 60 HP., single, double and triple-drum; all standard makes.

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Gouble and triple-drum; all standard makes.

PUMPS (Elect. Centrifugel)

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1-10218" Weatman-Jaseger No. P-4501, power, 50
1-832" Weethington, 4 stage, No. 67690GW, without power. Capacity 2000 GPM @ 35" head.

-832" Worthington, No. 816521, power 50 HP, AC motor. Capacity 2000 GPM @ 30" head.

-6326" Mortla, No. 109998, power 100 HP, 2200/80/3 silp ring motor. Capacity 1300

GPM @ 36" head. Shut off head 270".

GPM @ 36" head. Shut off head 270".

-6186" Alle Chailmers Dower, one and Budaengine, other end 58 HP AC electric motor, operate either power. Capacity 1900 GPM @ 10" head.

-6326" Allis Chailmers No. 5418, power 40 HP AC motor. Capacity 1000 GPM @ 70" head.

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-5328" Dayton-Dowd pump, No. 4718, power 10 HP AC motors.

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motor, Unbecky and Morelland Bredding:
1-10x10° Morris, size 10A, No. 86864, cap. 87
cu. yds. per hr.
-8x8° Catract, No. 175895, cap. 2090 GPM @
25° Bead.
25° Bead.

1-888" Cataract, No. 175895, cap. 2000 GPM @ 25" Feat.

1-888" Morris dredging pump, cap. 60 cu. yds. per br.

1-4x4" Hetherington & Berner, power 25 HP AC elect. mtr., cap. 450 GPM.

WE HAVE A LARGE STOCK OF CENTRIF-UGAL, LIFT AND FORCE, JETTING, VERTICAL, TRIPLEX, ETC., PUMPS NOT SHOWN IN THIS LIST, GAS AND ELECTRIC POWER.

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FOR SALE

Austin Gyratory Crusher No. 107.

Buchanan Type B 12" x 36" Jaw Crusher.

Altis-Chalmers Double Roll Crusher, Garfield Type, size 54" x 20", with new manganese roll shells.

Allis-Chalmers Double Roll Crusher, Type XX, size 54" x 24", with new tire steel shells.

Lippman Scrubber Screen, 72" x 18', complete with G.E. 20 HP motor, 440 volt with starter.

Tyler Type 31 Tandem Hummer Screen, 8'x 5' surface with G.E. Type G2 Motor Generator Set.

Address inquiries to:

AMERICAN ZINC COMPANY OF TENNESSEE

Paul Brown Building, St. Louis 1, Missouri

LOCOMOTIVES SHOVELS CRANES CARS

-42% ton Porter 0-4-0 saddle tank locomotive, standard gauge, A.S.M.E. boiler, entire new firehox rebuilt

26 ton American 0-4-0 saddle tank locomotive, standard gauge, A.S.M.E. boiler, thoroughly

-72% ton Baldwin 0-6-0 separate tender switcher, full time I.I.C. papers, overhauled.

-Whitcomb diesel locomotive, 36° gauge, with Caterpillar V-8 engine, air brakes, electric lights. This locomotive bulk in 1858 and has now been put in first class serviceable condi-tion with new wheels, chains, sprockets, re-versing gear, and bronze clutch plates. Weight 12 26 tons in full working order.

Western 30 yard two way air operated side dump ears, standard gauge, DROP DOOR TYPE, first class condition.

Birmingham Rail & Locomotive Co. BIRMINGHAM 1, ALABAMA

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ALL SIZES, TYPES

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-3' Symons with coarse bowl. -5'4' Symons with coarse bowl. -Traylor, bell head, 10" feed ope

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1-Komarek-Greaves 32° dia x 24° face, rated 25 t.p.h. with extra shafts and rolls.

5.0°x24' long, beary steel frame, semi-portable. Helt Feeders, steel frames, 24°x6'. Robins 24" Reciprocating Pan Feeder. Portable Belt Conveyors, 16°x25', 18°x25', else-

Dorr Combination Bowl & Rake Classifiers, 10' dla. with 2'3"x19'8" rake and 12' dia. with 2'3"x21'4" rake. DORR CLASSIFIERS

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-24"x40" Pennsylvania, Single roll.
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-40"x16" double roll, smooth shells.

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1—1 yd. P. & H. Showel, gasoline, fitted with new crawler treads.

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3-4'6"x16" and 6'x32", iron lined. 1-5'x22" iron lined, silent chain drive. 1-6'x36" silent lined, silent chain drive and motor. 3-8'x30" silex lined, belt driven.

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1-4'x12' Symons, 2-deck.

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RAYMOND MILLS

1—4 roll High Side, with air classifier, Raymond exhauster, cyclone collector and inter-connecting piping.

1—4 roll High Side, equipped with whixser air classifier. Raymond exhauster, cyclone collector, connecting piping, etc.

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2-5'x40', 5'x48', 6'x50', all made by Vulcan Iron Works. Equipped with firing hoods, complete. 1-8'x135' Allis-Chalmers, with 6'x40' rotary

DIRECT HEAT ROTARY DRYERS

2-5'x40'.

1-5'x30'.

Commer, mounted on steel I-beam with furnace, etc.

-6'x30'.

Nuggles-Chee, double shell.

1-6'x30'.

Karo'' type, single shell.

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Shops and Yard at Newark, N. J., cover eight acres.

Marion 1½ yd. Shovel & Crane, 65° bm., gas.
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Allis Chalmers W8-488 Tractor with 8 yd. hydraulic scraper, draulic scraper, draulic scraper, Model WO. Int. TD18 Tractor with anzle dozer. Allis-Chalmers Tractor, Model WO. Int. TD18 Tractor with anzle dozer. Allis-Chalmers K Tractor with bulldozer, Bucket Elevator, vertical, 25°, 22° buckets, B.S. 12 ton, 3 wheel Roller, gas. B.S. 10 ton, 3 wheel Roller, gas. B.S. 10 ton, 3 wheel Roller, scam. Galton 19 ton, 3 wheel Roller, scam. Galton 19 ton, 3 wheel Roller, 18 tracks, 4 Federal 8-yd. Dump Trucks, 4 Federal 8-yd. Dump Trucks, 1 Sterling 8-yd. Dump Trucks, 12 yds. Drill Steel, 118", bitted and shanked. Various lengths.

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lengths, Ingerwoll-Rand Model 50 Drill Sharpener, complete, 500 Drill Bits, I.-R. and Timken. Various sizes, COMCRETE PLANT AND EQUIPMENT Complete Ready Mix Concrete Plants. Transit Truck Mixers from 2 yds, 15 yds, Besser Super Tamper Concerbe Block Machine, Johnson 290 yd. Octo Bin, 4 compt. Puller C40 Rotary Air Compressor, electric. Koehring 34E Dual Drum Paver. Pavers: 2 Koehring, 10-15' up to 200. Plex-plane Finisher, 10-15' up to 320. Pl

Complete Rock Crusning, Stand and careet raines GUCKETS—STONE SKIPS

Owen 1 yd. Clamshell, rehandling.

Haw-Knox % yd. Clam, digging.

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We have the following new and used gasoline ngines ready for immediate ahipment, subject prior sale:

new R-33 Red Seal Continental motors, 115 h.p., valve-in-head.

5 new B-427 Red Seal Continental motors, 90 h.p. 1 E-613 used Red Seal Continental motor, 80 h.p.

1 used PE-383 80 h.p. Red Seal Continental.
1 used R-33 Red Seal Continental, 115 h.p., valve-in-bead.

1 used R-32 Red Seal Continental motor, 95 h.p., valve-in-head.

K-428 Buda, new block and platoms, 96 h.p.
 used K-393 Buda motor, 85 h.p.
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I used Waukesha motor, MZR, 80 h.p.

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42"	-	5	_	1/8"	_	1/16"					1/8"		
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				1/8"							1/8"		
30"	_	5	_	1/8"	_	1/16"	14"	_	4	_	1/16"	_	1/32"
24"	_	5	-	1/8"	-	1/32"	12"	_	4	_	1/16"	_	1/32"
24"	_	4	_	1/8"	_	1/32"	Inquir	e Fo	r Pri	ces -	Mention Si	ze an	d Lengths

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18"	_	6	10" -	- 6	6" -	5
16"	_	6	10" -	- 5	5" -	5
14"	-	6	8" -	- 6	4" -	5
12"	_	6	8 .	- 5	4" -	4
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ı	Page Engineering Co	9
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2	Plymouth Locomotive Works	1
3	Quartzite Store Co	15
2	Quartzite Stone Co	
2		
3	Raymond Pulv. Div	-
8	Rogers Iron Works Co	l
7 3 4		
4	St. Regis Paper Co Sauerman Brothers, Inc	d
8	Simplicity Engineering Co	1
2	St. Regis Paper Co. Sauerman Brothers, Inc. Simplicity Engineering Co. Sinclair Refining Co. Smith Engineering Works Smith, T. L., & Co. Standard of California. Standard Metal Mfg. Co. Standard Metal Mfg. Co. Standard Metal Mfg. Co. Stenbens-Adamson Mfg. Co.	1
6	Smith, T. L., Co	-
8	Standard Metal Mfg. Co	j
6	Stanhope, R. C., Inc	1
7	Stephens-Adamson Mfg. Co. Stoody Co.	
2	Sullivan Machinery Co	-
1	Talcott, W. O. & M. W.,	
1 3 9	Inc.	1
	Inc. Texas Co. Thornton Tandem Co. Traylor Engineering & Mfg.	
3	Co	1
4	Truck Equipment Co Tyler, W. S., Co	14.9
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0 2 9	United States Rubber Co. 20, Universal Concrete Pipe Co. Universal Road Machinery	1
	Universal Road Machinery	1
2	Co. Universal Vibrating Screen	1
2 4 2 5 9 7 3	Co. Unverzagt, G. A., & Sons	1
9		
7	Van Der Horst Corp. of America	1
	Vulcan Iron Works	
6	Walsh, J. T. Walsh, Richard P., Co. Ward LaFrance Truck Div. Weiss, B. M., Co. Wellman Engineering Co. Wilfley, A. R., & Sons, Inc. Williams Patent Crusher & Pulv, Co., Inside Front Co.	1
	Ward LaFrance Truck Div.	j
2 5	Weiss, B. M., Co	ı
25523	Wilfley, A. R., & Sons, Inc., Williams Patent Crusher &	1
3	Pulv. Co. Inside Front Co	I
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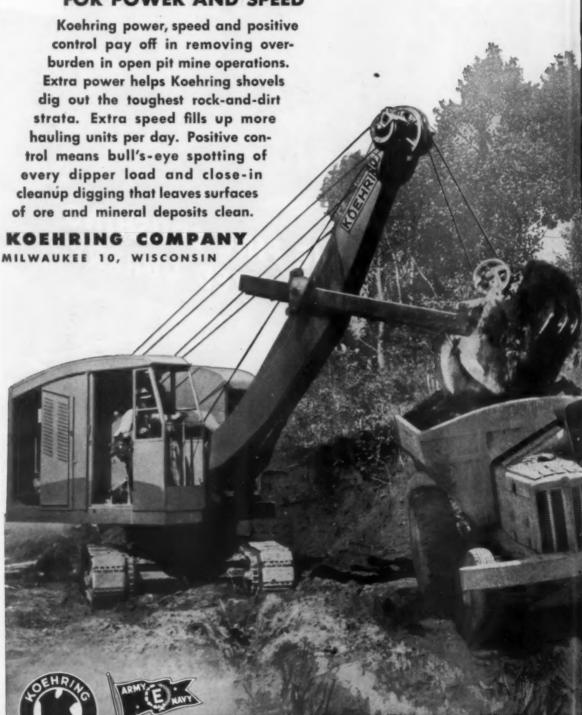
SYMONS CONE CRUSHERS

quantity but provide a more desir-

able product at lower cost.

STRIP OVER-BURDEN FASTER

DEPEND ON KOEHRING FOR POWER AND SPEED



HEAVY-DUTY CONSTRUCTION EQUIPMENT



